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Mitigating the Vampire Effect of Using Celebrity in Advertising: An Eye-Tracking Approach

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ABSTRACT

While marketing literature evidences celebrities and other well-known personalities as effective brand endorsers, practitioners are troubled by the potential for such famous personas to overshadow the brands and harm brand recall—a condition referred to as the vampire effect. This study investigates the existence of the vampire effect and more importantly how such an effect can be mitigated through changes in proximity and engagement between the celebrity and the advertised offering. A large-scale eye-tracking study of more than one hundred brands across eight product categories reveals that the vampire effect of celebrity endorsers is prominent, as viewers paid attention to the celebrity's face for a significantly longer time than they paid to other ad elements. From a visual attention approach, this research also sheds light on how to minimize the vampire effect by investigating celebrity–product visual and cognitive proximity through two controlled eye-tracking experiments. Both theoretical and managerial implications of the findings are discussed.

Engaging celebrities or well-known public figures to promote products and services has long been considered a popular and effective way to arouse consumer interest and build brand credibility. Over the past decade, this perennial advertising strategy has become more popular than ever due to fierce competition in the contemporary marketplace. With the wide array of products, models, and brand extensions developed, firms are paying top dollar to secure famous icons as spokespersons to compete for market presence and sales growth. For instance, even Nike, one of the world's most iconic brands, has spent an average of more than $6 billion annually on endorsement contracts and sponsorships, which is roughly equivalent to one-quarter of its annual revenue (De Crespigny 2021; McIntyre 2017).

Supported by decades of endorsement research, celebrities are purported to be effective brand ambassadors and promoters who can generate handsome returns on investment (Pringle 2004). The concept of celebrity is regarded as "a constructed subjectivity comprising distinct sets of self-referential, attention-seeking, marketing practice" (Hearn and Schoenhoff 2016, p. 196). They are attractive and trustworthy spokespeople (source attractiveness and credibility tenet), and their positive images inspire consumers to identify with the brand (image congruence tenet). Their fame and charismatic attributes help transfer positive affect to the brand through endorsement (affect transfer). Favorable consumer reactions toward the endorsed brand can be a result of fan–idol bonding (attachment and celebrity-worship tenet) and the match between brand and celebrity (matchup hypothesis). Simply put, these established theory strands provide a strong base to justify celebrity endorsement effectiveness.

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Celebrity endorsement is not without its risks, however. Besides worrying about their name and reputation being linked to a celebrity who may become involved in scandals or have a propensity for unacceptable behaviors, brands are also concerned whether celebrities may overshadow their names and messages in ads, such that viewers remember only the spokespersons but not the brands (Vinikas 2022). This condition is referred to as the vampire effect, with celebrity endorsers sucking dry the lifeblood of the advertised brand. Indeed, a study on the use of celebrity in nonprofit cause communication also highlighted the danger of "celebrities becom[ing] the focal point of attention at the expense of the cause" (Branigan and Mitsis 2014, p. 315).

To date, very few empirical studies have investigated this vampire effect, and most rely on participants' self-reported measure of brand recall. These studies lack the investigation of mechanistic processes of how celebrities overshadow the endorsed brand and, more importantly, the remedies for such effect. The present research therefore aims to address this gap by examining the vampire effect in a series of eye-tracking studies to explore how changes in ad design layout can mitigate this effect by strategically guiding the visual attention of viewers.

This study provides several contributions to celebrity marketing literature. First, it extends the current knowledge of celebrity endorsement by examining its possible drawbacks in a neuroscientific approach. Advancements in advertising research methods—eye-tracking technology, for instance—made it possible to measure directly consumer attention to advertising stimuli (for a review, see Wedel and Pieters 2014). Second, considering the amount of capital and credence invested into endorsement contracts (Um and Kim 2016), it is important to examine whether the vampire effect is a real threat to an advertised brand. Third, this study offers novel insights on how to alleviate the vampire effect by altering the visual as well as the cognitive proximity of celebrity endorser and brand within an ad.

Theoretical background and hypothesis development

Effectiveness of celebrity endorsement

Regardless of the theoretical strands, prior studies (including meta-analyses from Amos, Holmes, and Strutton 2008; Knoll and Matthes 2017) generally support the effectiveness of celebrity endorsement. Research on this topic takes on different facets that were highlighted by scholars at different time periods.

In the 1980s, studies discovered that attractiveness and credibility of the celebrity have a positive impact on brand recall (e.g., Kahle and Homer 1985; Halder, Pradhan, and Chaudhuri 2021; Hussain et al. 2020). Many movie stars, musicians, professional athletes, and supermodels, who have gained recognition through their outstanding performances, talents, appearances, and/or distinctive characters, are well liked, admired, or even imitated by consumers. Accordingly, scholars began to explore the image and meanings that celebrity carries. Work by McCracken (1989) found an important mechanism of meaning transfer from celebrity to endorsed brand, while other scholars put forward image congruence between a celebrity and consumer's ideal self, and between celebrity and the endorsed brand, as key drivers in enhancing endorsement effect (Rifon et al. 2004; Choi and Rifon 2012). As marketing professionals also generally acknowledge that an effective endorsement should foster a match or connection between the celebrity and brand that aids consumer recall of the endorsed brand (Keller 1993), researchers have documented the salience of the matchup hypothesis (Kamins 1990; Till and Busler 1998).

Furthermore, media and cultural studies become interested in the relational attachment between celebrity and consumers (e.g., McCutcheon, Lange, and Houran 2002). Consumers often feel attached to distinctive characters in movies and shows and subsequently form parasocial bonds with these celebrities. Such relational bonding has led consumers to follow or even replicate the styles of celebrities, creating revolutionary impacts on cultural trends, norms, and lifestyle habits of the general public. Holt and Thompson (2004) enrich this relationship paradigm by delineating that movie stars are regarded as "men of action" through whom consumers can escape from

their mundane lives and act out their fantasies and dreams. More recent studies further delineate parasocial bonding with celebrities, from lighthearted entertainment to intense engagement, such that consumers may promote the endorsed brands by purchasing in large quantities to support their idols (Hung 2014; Jia, Hung, and Zhang 2020) even when the endorser–brand fit is poor (Carlson et al. 2020).

Despite the wealth of celebrity endorsement literature, researchers have also begun to question the empirical validation of using celebrity endorsers to achieve favorable brand outcomes. Traditionally, prior research may have focused on Pavlovian effects (i.e., classical conditioning) that associate the favorable characteristics of a celebrity with the endorsed brand. More and more scholars have shifted their focus to examine the potential drawbacks and boundary conditions of celebrity endorsement. For instance, Mehta (1994) found that compared to viewing a commercial with an unknown spokesperson, those who viewed the celebrity version mentioned more endorser-related responses in a thought-listing task. Yet this did not result in significant differences in brand attitude or purchase intentions. Costanzo and Goodnight (2006) further demonstrated that although subjects could correctly identify celebrities in ads, these respondents were less accurate in matching the corresponding celebrity-endorsed brands, and some even connected a celebrity endorser to a competitor's brand. A recent study by Erfgen, Zenker, and Sattler (2015) shed light on the direct impact of celebrity overshadowing the endorsed brand. In their study, a reduction in brand recall was found when an ad stimulus featured a celebrity endorser versus one with an unknown yet equally attractive endorser (Erfgen, Zenker, and Sattler 2015).

Overall, advertising research to date has offered mixed findings toward the effectiveness of celebrity endorsement, and the framework that best explains celebrity endorsement remains hotly debated (Olmedo et al. 2020; Schimmelpfennig and Hunt 2020). Coupled with the assistance of advanced methodologies such as eye tracking and pupillometry, recent studies have revealed the drawbacks of this popular advertising strategy from the neuroscientific approach (Halder, Pradhan, and Chaudhuri 2021) to complement the traditional black-box approach employed in past literature. This present study also takes a step back to examine the important initial stage of information processing, which is visual attention directed to various ad stimuli. Using an eye-tracking method, this article examines the psychophysiological mechanism of why vampire effect exist and, more importantly, explores how to mitigate the vampire effect brought about by celebrity endorsers. The use of eye-tracking technology in the current study can help make up for deficiencies in past research relying on memory recall and self-reported attitudinal measures.

Vampire effect and visual attention

Although there is no consensus on a precise definition of the vampire effect, advertising professionals generally perceive it as any image, person, or object that pulls awareness of the target audience away from the product or brand key messages (Kuvita and Karlicek 2014). Some studies refer to it as the overshadowing effect or eclipsing effect.

In comparing ads featuring a celebrity endorser versus an unknown but equally attractive endorser, Erfgen, Zenker, and Sattler's (2015) study revealed brand recall was worse in the celebrity endorser condition. Moreover, average consumers (not fans) reported a more negative brand attitude when they saw a high-eclipsing ad (celebrity dominates and overshadows the brand) than a low-eclipsing ad, irrespective of whether they perceived the celebrity and brand matched (Ilicic and Webster 2014).

On the other hand, studies adopting the eye-tracking technique provide a more direct investigation of the vampire effect. In studying a Brazilian sample, participants paid more attention to the celebrity, Gisele Bundchen, in comparison to other stimuli presented in the ad (Falsarella, de Oliveira, and Giraldi 2017). Similarly, in examining the vampire effect on male audiences,

Tomak and Aksoy (2021) found that when fixation duration to celebrity increased, brand recall accuracy decreased and brand recognition rate dropped by 47.8 percent. Also, when presenting more objects in an ad, participants tended to watch the most familiar element (i.e., celebrity) at the expense of the advertised product and logo (Pelau et al. 2022). Other related studies concurred that the vampire effect of celebrity endorsement was prevalent in both fast-moving consumer goods (FMCG) categories and non-FMCG product categories (Rizvi 2020), as well as across celebrities with different levels of popularity, specifically, internationally well-known and nationally well-known (Nistoreanu, Pelau, and Lazar 2019).

Such overshadowing of celebrity endorsers can be explained by the accessibility–diagnosticity framework (Feldman and Lynch 1988). Accessibility refers to the ease of retrieving a piece of information from memory, while diagnosticity refers to the extent to which the retrieved information is sufficient to arrive at a decision or judgment (Menon, Raghubir, and Schwarz 1995). Using this accessibility–diagnosticity framework in understanding the vampire effect, it suggests that compared to an unknown endorser, a celebrity is considered a more accessible and diagnostic (useful) piece of information that viewers will spend more effort or time on, thus leaving less cognitive processing effort on other ad stimuli (Erfgen, Zenker, and Sattler 2015). While the underlying assumption from this argument is that the celebrity endorser outcompetes the brand for consumers' limited attention, this explanation has not been directly tested in previous studies. Consequently, the present article offers a pioneering attempt to address this issue by examining consumers' visual attention via the eye-tracking technique. Specifically, attention to various ad elements, including the celebrity endorser, brand-related information (i.e., logo and product message), and other components (i.e., background), will be captured and analyzed to validate the role of visual attention in the vampire effect. More importantly, alterations in ad design will be introduced to mitigate this effect.

Attention is defined as a limited-capacity cognitive process that can be varyingly allocated depending on different motives and different locations in the visual field (Eriksen and James 1986). At one end of the spectrum, attentional resources can be uniformly allocated across an entire effective visual field; at the other end, they can be selectively concentrated on a particular subset of information (Eriksen and James 1986). The operation of visual attention has often been modeled by cognitive psychologists using the spotlight model (Eriksen and Hoffman 1972) and zoom-lens metaphors (Eriksen and James 1986). The spotlight model describes the attention focus as analogous to the beam of spotlight. When the spotlight is directed at one location, information within the beam is attended to and processed accordingly, while information outside of the spotlight is left unattended (Eriksen and Hoffman 1972). The focus of visual attention is hence believed to be restricted in spatial size. Nevertheless, Eriksen and James (1986) proposed a more updated analogy of the zoom-lens model. A zoom lens on a low-power setting (i.e., no magnification of the objects) provides a wide visual field with little discrimination of details. As the lens increases its power of magnification, the field of view constricts, with an accompanying increase in resolution for object details. Added to the accessibility–diagnosticity framework, this model suggests a trade-off between the visual view and the magnification or accessibility of detail for objects.

Attentional biases toward (familiar) human faces

In an information-cluttered media environment, capturing consumer attention has long been an important strategic issue for advertisers (Pieters and Wedel 2004; Myers et al. 2020). When scanning our visually complex environment, viewers encounter too many stimuli to fully process all of them at one time. The brain must therefore evaluate the incoming stimuli according to importance and decide which to focus on and which to ignore (Palermo and Rhodes 2007). Compton (2003) proposed that the emotional significance of a stimulus is one of the primary ways to determine object or event importance. Emotionally significant stimuli are likely to command more attentional resources. "[Human] faces are among the most biologically and

socially important stimuli in the human environment, and are certainly emotionally significant" (Palermo and Rhodes 2007, p. 87), and they are thus expected to receive enhanced processing. A face, which helps to distinguish friend from foe, in-group from out-group, conveys crucial messages for social interactions (e.g., gender, identity, race, attractiveness). A human face thus has special access to visual attention (Compton 2003) and is considered a diagnostic piece of information under the accessibility–diagnosticity framework.

Central to explaining the attentional bias toward celebrity endorsers at the expense of other ad stimuli, detecting facial configuration is found faster and more efficient than many other stimuli reported in various cognitive neuroscience studies. For instance, electrophysiological results suggest that faces are identified in about 100 milliseconds (ms), double the speed required to categorize objects and words (Pegna et al. 2004). Upon presenting flickering displays (where visual changes are made difficult to detect), changes to an unfamiliar face—from a female face to another female face—were detected both more quickly and more accurately than changes made to objects (e.g., change from an apple to broccoli; Ro, Russell, and Lavie 2001). These results suggest that human faces may have a special (perhaps biologically wired) capacity to recruit attention when competing with other stimuli for attentional resources.

Why, then, should brands use celebrities and not unknown endorsers? Research suggests that the viewer requires fewer attentional resources (and hence more enhanced processing) when viewing highly familiar faces versus unfamiliar ones (Tong and Nakayama 1999). Celebrities, by definition, are "any native or foreign individuals who are famous or widely known to the public" (Choi, Lee and Kim 2005, p. 89; Praet 2001). Celebrities are widely recognized and repeatedly seen via different media channels. With this definition, viewing celebrity faces (i.e., familiar faces) therefore prompts more automatic and efficient activation of attentional resources compared to viewing other ad elements. In other words, celebrity endorsers, as individuals that audiences recognize and even like, become an easily accessible piece of information in making subsequent ad or brand evaluations.

In sum, we hypothesize that the vampire effect will occur when an ad features a celebrity endorser such that the appearance of a celebrity will attract more attention at the expense of other brand stimuli (e.g., brand logo, product message). We also intend to replicate previous research findings (e.g., Erfgen, Zenker, and Sattler 2015) that ads containing celebrity endorsers may impair brand recall using self-reported measures.

H1(a): Recall of brand message is lower when an ad contains a celebrity endorser than when an ad does not contain a celebrity endorser.

H1(b): For ads containing a celebrity endorser, more attention (i.e., for a longer period and more fixation time) is allocated to the celebrity's face than to other ad elements (e.g., brand logo, product, ad message).

Using proximity and association between visual cues to mitigate the vampire effect

Along with examining the vampire effect from a visual attention approach, it is important to address how to mitigate such an effect. Research on combating the vampire effect is very limited. Prior literature focuses on brand features and the brand–endorser relationship as possible moderators, yet results regarding weakening the vampire effect were mixed. On one hand, Erfgen, Zenker, and Sattler (2015) proposed that a well-known brand might suffer less from the vampire effect than a less-familiar brand given its high accessibility and diagnosticity. Their experimental results, however, suggested that brand familiarity did not moderate the vampire effect, as both more-familiar and less-familiar brands suffered from it. On the other hand, high congruence (or strong cognitive link) between endorser and brand is found to attenuate the vampire effect (Erfgen, Zenker, and Sattler 2015). Few eye-tracking studies have focused on how to resolve the attentional bias brought by celebrity endorsements in advertising. The present study thus aims

to provide novel insights into an efficient way of manipulating ad layout in its visual and cognitive proximity.

Visual proximity: Screen size

Following the zoom-lens model of attention, when the zoom lens (i.e., attention) is concentrated on certain object details (e.g., a celebrity's face), other stimuli presented in the periphery would receive a very limited level of information processing unless there is a corresponding change in eye gaze (Eriksen and James 1986). It is like taking a close-up portrait photo with a blurred background: the focus area is sharply demarcated, and the remaining visual field is processed with low residual processing resources. This gaze pattern is apparent in viewing ads with celebrity endorsers on bigger screens like televisions and computer monitors. On a 30-inch (76.2 cm) computer monitor, for example, an object or motion that appears in the corner of the screen is considerably farther from the focal area than on a smaller screen such as a tablet or smartphone. As the attention to stimuli in the peripheral field is smaller, the available information for processing would be quickly exhausted. On a 5-inch (12.2 cm) mobile screen, however, the same object or motion will be processed as very close to the focal vision, which facilitates information extraction. Reeves et al. (1999) suggest larger screen sizes produce larger mental images that capture more attention. That said, it can be deduced that a natural attention grabber (i.e., a celebrity face) appearing on a larger screen will receive more attention, heightening the vampire effect. One may argue the ease of use and information processing is lower with smaller screen sizes (e.g., using a 1.65-inch [4.19 cm] mobile phone for video-based learning in Maniar et al.'s (2008) study; or performing a webpage task using a 3.7-inch [9.4 cm] mobile screen in Kim and Sundar's (2014) study); this study takes a parsimonious approach to investigate how visual proximity of ad stimuli may affect the vampire effect on a large screen (an average desktop monitor) versus a smartphone (with an average-sized screen). Thus, it is hypothesized as follows:

> **H2(a):** The fixation time on a celebrity endorser is longer when viewing the ad on a large screen (e.g., a desktop monitor) than on a small screen (e.g., a smartphone).

> **H2(b):** The vampire effect of a celebrity endorser is attenuated when the ad is viewed on a small screen (higher visual proximity) versus a large screen. That is, the difference in fixation time between celebrity face and other ad elements on a small screen (smartphone) is smaller than the difference in fixation time on a large screen (desktop monitor).

Cognitive proximity: Endorser contact with advertised offering

Building on previous studies on image congruence between celebrity and endorsed brand, we argue that the vampire effect may be less noticeable when consumers perceive an overt connection between the celebrity and the brand. As in the case of Nespresso and George Clooney, the brand and celebrity may not have an obvious connection initially, but consumers learn this endorsement pairing over time according to the associative learning theory (Till 1998). The brand and celebrity represent nodes in memory; endorsement exposures help connect the two nodes such that the celebrity serves as a retrieval cue for the brand and thereby facilitates brand recall (Till 1998). While the effectiveness of celebrity endorsement based on the image congruence paradigm must be built and reinforced over time, here a more deliberate means to enhance the connection between the brand and celebrity endorser is proposed. It is through celebrity–product contact.

When an ad features more contact between the celebrity and the promoted offerings, such as holding, using, or looking at the offering, viewers' attention may shift more to the advertised product by tracing the motion and/or expression of the celebrity endorser. Extensive research has shown that humans and primates tend to align their visual attention with the direction of gaze from others (e.g., Kuhn and Kingstone 2009; Shepherd 2010). We argue that because humans have a strong preference to pay attention to a familiar human face (Palermo and Rhodes 2007),

any change in the gaze or expression of a celebrity toward the advertised product will arouse attention from viewers, thus creating more association between the two connecting nodes and in turn weakening the vampire effect. From a visual-attention approach, it is expected that viewers' gaze will follow the body gesture or eye contact of the celebrity when he or she makes contact with the advertised product. In addition, the delay in fixation time between celebrity and other ad elements (i.e., vampire effect) would be smaller when an endorser comes in contact with the product versus does not contact the product. Hypothesis 3 is proposed:

> **H3:** The vampire effect is attenuated when an ad displays endorser–product contact(s) compared to an ad that does not. In eye-movement analysis, the delay in fixation time between celebrity face and other ad elements in an endorser–product contact condition is smaller than in a no-contact condition.

Overview of empirical studies

To test the hypotheses, three eye-tracking empirical studies were conducted. Exponential growth in consumer neuroscience technologies helps make up for limitations in past advertising research. By probing the level of attention to elements within ads, eye-tracking techniques appear to be an effective and objective form of measuring advertising effectiveness (e.g., Bigne et al. 2021; Myers et al. 2020). In Study 1, the vampire effect (hypothesis 1) was tested using a large-scale eye-tracking sample with real-life TV commercials of 101 brands across eight categories. In Study 2, the possible moderating impact of screen size (hypothesis 2) was tested using the same forty ad stimuli featuring celebrity endorsers in Study 1 but displayed on a smartphone screen. In Study 3, a controlled laboratory experiment was conducted to manipulate celebrity–product contact (hypothesis 3).

Study 1: Eye tracking with real-life brand ads

Study 1 aims to test the occurrence of the vampire effect by examining whether a celebrity attracts more attention at the expense of other ad elements such as the advertised product, brand logo, and ad message. The vampire effect exists if the fixation time on a celebrity endorser is longer than that of other ad elements. The study context took place in China, where celebrity endorsement has been a highly popular marketing strategy. As reported in Zhang and Hung's (2020) study, more than 50 percent of ads in China featured one or more celebrity endorsers—well above the 25 percent found in the U.S. counterpart.

Data and measures

Data
We test our hypotheses by using data obtained from a leading enterprise-level artificial intelligence (AI) products and services provider in China: Mininglamp Technology. This company helps enterprises collect and integrate consumer data from multiple sources. Mininglamp Technology shared eye-tracking data on real-life brand commercials with us. The data pertain to 101 actual brand commercials across eight product categories, including utilitarian products (e.g., electronic appliances, daily necessities), hedonic products (e.g., beverages and confectionery), and service brands (e.g., finance, online portal). The ad sample covered both well-known foreign ($n = 49$) and domestic ($n = 52$) consumer brands. For each of the eight product categories, two to three existing TV commercials were selected from different foreign and local brands. We did not specify any quota in selecting ads that contain celebrity endorser to provide a more naturalistic sample for the eye-tracking experiment. Celebrity endorsers featured in different ads come from a diversity of specializations, such as actors, music artists, sports figures, fashion models, broadcasters/TV hosts, and company executives. This broad

range of product categories and real-life brand ads ensured good generalizability of the findings.

Each TV commercial was 15 seconds long. Each was viewed by forty participants. Participants were recruited from the e-panel of Mininglamp Technology through its sample pool with its proprietary rewards to match the planned quota of gender ratio 50:50. Ages ranged from twenty to forty-five with high school or above education level and an average household income of 8,000 Chinese yuan (RMB) and above. The study was conducted in a controlled lab environment on a one-researcher-to-one-participant basis. To mimic natural viewing behaviors, participants were first asked to choose a TV drama or movie to watch on a streaming platform, and then they went through a calibration process. Before watching the selected TV drama or movie, each participant was exposed to six commercials on a full screen while the eye tracker captured their eye movement. The ads were equally represented, and the order of ad appearance was randomized. The viewing time for each ad was kept to 15 seconds. Participants were then asked to complete a self-report questionnaire about their perceptions of the ads. Finally, they were thanked and compensated.

Measures

Table 1 details the operationalization of variables and descriptive statistics of the data provided by Mininglamp Technology. Table 2 contains the correlations for the study variables.

Table 1. Variables operationalization and descriptive results ($N = 101$).

Method	Variable	Description of Measurement	Min	Max	M	SD
Eye tracking	Fixation time	TV commercial	5.90	14.64	8.30	1.95
		On five areas of interest				
		Spokesperson*	2.10	11.45	5.56	2.05
		Brand logo	0.32	13.16	5.26	2.23
		Advertised product	0.46	8.19	3.27	1.70
		Ad message	0.74	8.24	3.30	0.86
		Background	0.00	4.26	0.13	0.57
Self-report questionnaire	Unaided brand recall	Ratio of correct answers	0.27	0.97	0.73	0.13
	Unaided ad message recall	Ratio of correct answers	0.33	0.80	0.52	0.11
	Attitude toward the ad	5-point scale (1 = *Negative*, 5 = *Positive*)	3.31	4.32	3.84	0.17
	Purchase intention	5-point scale (1 = *Negative*, 5 = *Positive*)	3.13	4.37	3.69	0.19
	Brand familiarity	5-point scale (1 = *Not at all*, 5 = *Totally*)	3.55	4.19	3.86	0.15
	Seen ad before or not	*Yes* or *No*	0.05	1	0.77	0.09

*For ads that contain spokesperson.

Table 2. Correlation matrix from Study 1.

	Correlation Matrix											
Variables	1	2	3	4	5	6	7	8	9	10	11	12
1. FT on commercial	1											
2. FT on spokesperson	.338**	1										
3. FT on brand logo	.205*	.076	1									
4. FT on product	.100	−0.076	.065	1								
5. FT on ad message	−0.015	.096	.119	−0.088	1							
6. FT on background	−0.035	−0.048	−0.083	−0.027	−0.066	1						
7. Unaided brand recall	.168	.174	.002	.025	.032	−0.085	1					
8. Unaided ad message recall	.111	.104	−0.098	.100	−0.042	.113	.058	1				
9. Attitude toward ad	.004	.083	.001	.036	.017	−0.046	.015	.031	1			
10. Purchase intention	.058	.055	.109	.089	.024	−0.047	.022	.187	.658**	1		
11. Brand familiarity	.063	.022	.172	.128	.074	−0.125	.058	.075	.408**	.646**	1	
12. Seen ad before or not	.101	.062	.188	−0.294	.098	−0.320*	.144	−0.122	.248	.086	.077	1

Note. FT = fixation time.
*$p < .05$; **$p < .01$.

Eye-tracking data. Eye-movement data was captured at 30 Hertz (Hz) using The Eye Tribe powered by Gazelab software. This eye-tracking device was integrated below a 22-inch (55.9 cm) monitor (1920 × 1080 pixels) with an average accuracy of 0.5 degree of visual angle. A total of five areas of interest (AOIs) were created using Gazelab. They include spokesperson, brand logo, advertised product, ad message, and background. AOI was defined as the boundary around an element (e.g., a product) as the unit of analysis of eye-movement data. To measure the dynamic AOIs on TV commercials with maximum accuracy, the Mininglamp Technology team laboriously analyzed each second of the ad as a separate static picture. The ratio of fixation (e.g., fixation time on AOI/total fixation time on the commercial) was used to investigate participants' attention to the celebrity endorser and other ad elements.

Self-reported questionnaire. Questions on unaided brand recall and unaided ad message recall were asked in the self-reported questionnaire. Both were measured in terms of the ratio of correct answers. Attitudes toward the ad and purchase intentions were measured on a 5-point scale (1 = *Negative*, 5 = *Positive*). Brand familiarity and whether the participant saw the ad before were asked to control for possible confounds.

Analysis and results

The data set held one case for each brand ad ($n = 101$) on which participants' recordings were aggregated. No significant difference was found in the total fixation time on brand ads across eight product categories (F (7, 93) = 1.009, p = .430), thus the real-life brand commercials were assumed to be structurally equivalent.

We predicted that use of celebrity endorsers would produce the vampire effect: participants' attention on the celebrities would be longer than that of other ad elements and in turn impair message recall. The vampire effect was tested using self-reported brand recall and eye-tracking data.

First, in comparing commercials containing celebrity endorsers ($N = 40$) with those without ($N = 61$), we controlled for whether the participants had seen the ad before and brand familiarity. Results showed that unaided brand name recall was significantly lower for ads containing a celebrity ($M_{correctratio}$ = .706, SD = .09) than for those without a celebrity ($M_{correctratio}$ = .742, SD = .10; t (97) = −2.146, p = .034). There was no significant difference found in unaided message recall for ads containing a celebrity ($M_{correctratio}$ = .521, SD = .121) and those without ($M_{correctratio}$ =.532, SD = .112; t (99) = .484, p = .63). Using self-report measures of brand recall, the current results replicate previous research in providing support for hypothesis 1(a)—that the use of celebrity endorsers in ads impairs brand recall. It is reasonable to expect that the number of ads presented would affect recall capacity such that specific ad message recall yielded a generally poor performance regardless of whether an ad contained a celebrity endorser.

Second, using eye-tracking data to examine the vampire effect, we found that the fixation ratio on celebrity (M_{ratio} = .644, SD = .182) is significantly longer than that on advertised product (M_{ratio} = .398; SD = .220; t (39) = 5.50, p < .001), ad message (M_{ratio} = .407; SD = .153; t (39) = 6.50, p < .001), and background (M_{ratio} = .017; SD = .062; t (39) = 18.96, p < .001), but not on brand logo (M_{ratio} = .617; SD = .182; t (39) = .696, p > .10). Overall, participants allocated more attention to the celebrity endorser at the expense of other ad elements, except for brand logo, which is likely to be a prominent stimulus in a commercial. The eye-tracking findings confirmed hypothesis 1(b).

Discussion

Both the self-reported brand recall measures and the objective eye-movement findings of Study 1 confirm the vampire effect suggested by advertising practitioners and scholars alike. From a

cognitive perspective, there is an attentional bias toward human faces, particularly familiar ones like celebrities. In advertising, this bias results in more attentional resources allocated toward celebrities at the expense of other ad elements, including ad message, advertised product, and background.

Study 2: Vampire effect on different screen sizes

The occurrence of the vampire effect is apparent as shown in prior eye-tracking research and in Study 1. To mitigate this effect of celebrity presence, it is hypothesized that a close visual proximity of ad elements would facilitate information extraction from the central visual field. Even though attention is captured by the celebrity, when viewing on a small screen like on a smartphone (as compared to a bigger screen/desktop monitor), there is a higher chance of attention shifting to the advertised product or message.

Method

The same forty real-life TV commercials featuring celebrity endorsers in Study 1 were employed in Study 2. We asked Mininglamp Technology to invite a separate group of participants with similar demographics as in Study 1. This time, participants viewed the ads on a smartphone of 5.5-inch (14 cm) screen size at 1920×1080 pixel resolution. The eye tracker and the smartphone were mounted on a viewing stand the same distance from the participants as in Study 1, meaning that the visual angle was kept the same. Procedures and measures were the same as Study 1.

Analysis and results

Similar to Study 1, no significant difference was found in the total fixation time on ads across the eight product categories (F (7, 32) = 1.979, p = .189) when viewing ads on a smartphone screen. Results also revealed that the total fixation time did not differ across desktop monitor (M = 8.65, SE = .36) and smartphone screen (M = 7.27, SE = .38; F (2, 78) = .469, p = .495).

Regarding self-reported measures, while there was no significant difference in brand recall between desktop monitor sample ($M_{correctratio}$ = .706, SD = .09) and smartphone screen sample ($M_{correctratio}$ = .696, SD = .10, p = .537), participants who viewed celebrity ads on a smartphone screen ($M_{correctratio}$ = .521, SD = .12) performed better in message recall than those who viewed the ad on desktop ($M_{correctratio}$ = .500, SD = .11, p = .095), which hinted at a more efficient information extraction through focal vision field.

Hypothesis 2(a) posits the differences in viewer attention to celebrity endorsers between bigger screen size (desktop monitor) and smaller screen (average smartphone size). As expected, an independent t test revealed a significant difference in viewers' fixation duration on celebrity endorsers when the ads were displayed on different screen sizes (t (78) = −5.082, p < .001). The fixation duration on celebrity endorsers displayed on a large desktop screen (M = 556.32 ms, SD = 204.82) was higher than when displayed on a small smartphone screen (M = 481.89 ms, SD = 208.71), thus confirming hypothesis 2(a).

Vampire effect was calculated by calculating the difference in fixation duration between celebrity face and other ad elements (e.g., the product). Then the vampire effect level on each ad element displayed on a desktop or smartphone was compared using independent t tests. Significant differences were found between desktop and smartphone screen groups. Specifically, vampire effect on ad message (M_{diff} = 218 ms, SE = 36.5, p = .020), on product (M_{diff} = 233 ms, SE = 45.4, p < .001), and on background (M_{diff} = 542 ms, SE = 35.3, p < .001) displayed on a desktop monitor were significantly larger than that on a smartphone screen (celebrity and ad message: M_{diff} = 189 ms, SE = 35.1; celebrity and product: M_{diff} = 208 ms, SE = 43.5; celebrity

and background: M_{diff} = 469 ms, SE = 35.3). No significant difference was found in the desktop and smartphone groups in the vampire effect on logo. Compared to viewing ads on a larger screen, participants in the smartphone condition allocated more attention to other ad stimuli (except for logos) in addition to celebrity endorsers, thus largely confirming hypothesis 2(b).

Discussion

A parsimonious suggestion of bringing the ad elements visually closer together by viewing the ad on a smartphone screen is examined to mitigate the vampire effect of celebrity. As simple as it may sound, Study 2 reveals that the vampire effect of celebrity is attenuated when ads are viewed on smaller screens, as participants perform better in message recall and fixation duration differences between celebrity and other ad elements become smaller. Findings indicate that visual proximity of ad elements is essential to optimize attentional resources. With smaller screens, ad elements can be spotted more easily from central vision, which aids in information extraction.

Study 3: Attenuating vampire effect by endorser–product contact

While using real-life brand commercials offers good external validity, these conditions were restricted by possible confounds such as celebrity type, audio impact, and background music, any or all of which may influence audience attention. To enhance methodological rigor, Study 3 employed carefully designed static print ads to better control for possible confounds and to examine the mitigating solution of manipulating endorser–product contact. It is argued that viewers will pay more attention to an advertised brand and its products if the celebrity endorser makes contact with the product in some way—either by body gesture or eye contact (in contrast to looking straight at the camera).

Method

Forty postgraduate students and administrative staff (twenty-one women; mean age range = twenty-five to thirty-five years old) from a large university in Hong Kong participated in this eye-tracking experiment. A Tobii pro TX300 eye tracker with a 23-inch (58.4 cm) monitor (1920 × 1080 pixels) was used to collect eye-gaze data at a 300-Hz sampling rate. The threshold for defining a fixation was set at 100 ms. Each participant's eyes were set to be approximately 23.6 inches (60 cm) from the screen. Tobii Studio software was used to define the AOIs and to compute eye fixations and visual scan paths for this experiment. Data from four participants were excluded from analysis due to poor eye-movement calibration.

Procedures and design

Each recording was preceded by a default nine-point calibration procedure. This study created two sets of fictional print ads consisting male and female celebrities with two conditions: making contact with advertised product (i.e., contact condition) versus no contact with advertised products (i.e., no-contact condition; see Appendix A for ad sample). The male celebrity was a local middle-aged music artist. The female celebrity was a local middle-aged actress. They were chosen because (1) they were still active in appearing on screen, (2) they had previously endorsed a variety of product brands, and (3) they were well-known with modest popularity to allow room for ad manipulation. The position of celebrity in the ad was kept comparable to avoid any artifact of position affecting a viewer's attention. Instant coffee and chocolate were used as bogus promotional products. Participants were randomly assigned to either the contact or no-contact group and were asked to view six ads in total (two experimental stimuli along with four filler ads). The order of ad appearance was randomized, and the viewing time for each ad was kept

to 6 s. After the gaze data recording, participants then engaged in a filler task of reading an article about environmental protection. They were then asked control questions, including celebrity familiarity and attractiveness, ad avoidance measures adapted from Speck and Elliott (1997), brand recall, and demographic questions.

Analysis and results

As manipulation checks, all participants acknowledged the male and female endorsers in the ad as celebrities ($M = 1.47$; 1 = *Definitely yes*, 5 = *Definitely no*). When viewing ads featuring male or female celebrities, there were no significant differences in the initial fixation duration (M_{male} = 288 ms, M_{female} = 282 ms, t (35) = .086, p = .932), level of familiarity (M_{male} = 2.11, M_{female} = 2.11, t (35) = .0, $p = 1.00$), or level of attractiveness (M_{male} = 3.86, M_{female} = 3.65, t (35) = 1.244, p = .222). This finding ruled out possible attentional or attitudinal differences toward male versus female celebrity endorsers employed in this experiment. Eye-tracking results of the two tested celebrities were combined for the following analysis.

Celebrity face, brand logo, and advertised product were defined as AOIs for the analysis. To test the magnitude of the vampire effect, similar to Study 2, the difference between fixation on celebrity face and advertised product, and between face and logo, was transformed as an index of vampire effect level. Vampire effects were then compared across the two conditions in terms of first fixation delay, initial fixation duration, and total fixation duration. First fixation delay indicates the amount of time it takes for an individual to look at a specific AOI from stimulus onset (Farnsworth 2020). It also provides information about how viewers prioritize different aspects of the ad stimuli. Along with first fixation delay, initial fixation duration measures how long the first fixation at a certain AOI lasted and can be compared with other AOIs to determine the first impressions of AOIs (Farnsworth 2020). Total fixation duration quantifies the total amount of time that viewers spent looking at a particular AOI. Table 3 presents the variables' operationalization.

First, using self-reported measures of brand recall, participants in celebrity–product contact conditions reported more accurate brand recall ($M_{correct}$ = 1.72, SD = .27) than those in no-contact conditions ($M_{correct}$ = .80, SD = .58, F (2, 40) = 3.75, p = .061, $\eta_p^2 = .10$) after controlling for ad avoidance. This finding implies offering overt connection (or cognitive proximity) between celebrity and advertised product via physical contact helps alleviate the vampire effect by enhancing brand recall.

Second, examining eye-tracking measures in terms of first fixation delay, the time elapsed between initial attention on endorser and advertised product was shorter in celebrity-product contact conditions ($M_{contact}$ = −1.84) than that in no-contact conditions ($M_{nocontact}$ = −2.42, Table 4), meaning that participants shifted their attention more quickly from celebrity to advertised product when the endorser engaged in eye or body contact with the product. Interestingly, timelapse between initial attention on endorser and brand logo was longer in contact conditions ($M_{contact}$ = −1.37) than that in no contact conditions ($M_{nocontact}$ = −0.63; Table 4). Such gaze patterns may be caused by the brand logo being farther from the ad center where the endorser and product were positioned.

Table 3. Variables operationalization.

Variable	Operationalization	References
First fixation delay	The amount of time it takes to look at a certain AOI from stimulus onset	Farnsworth (2020)
Initial fixation duration	How long the first fixation at a certain AOI lasted	
Total fixation duration	The total length of fixation at a certain AOI	
VE	The difference in fixation between celebrity face and other AOIs (e.g., VE on product in total fixation = total fixation on celebrity face – total fixation on product)	—

Note. AOI = area of interest; VE = vampire effect.

Table 4. Effects of celebrity–product contact on vampire effect (VE).

	M (SE)			
Eye-Tracking Dependent Variables	Celebrity–Product Contact	No Contact	t Value	d
First fixation delay				
VE on product (i.e., face–product)	−1.84 (.238)	−2.42 (.267)	−1.60[+]	1.46
VE on logo	−1.37 (.199)	−0.63 (.177)	2.778**	1.21
Initial fixation duration				
VE on product	−0.178 (.046)	−0.001 (.056)	2.42*	0.432
VE on logo	−0.071 (.019)	.012 (.045)	1.68[+]	0.130
Total fixation duration				
VE on product	−0.041 (.050)	0.056 (.047)	1.39[n.s.]	—
VE on logo	0.065 (.030)	0.083 (.031)	0.412[n.s.]	—

Note. d = Cohen's d (effect size estimates).
**$p < .01$; *$p < .05$; [+]$p < .10$; n.s. = not significant.

Third, participants were found to spend similar initial fixation duration on celebrity and product ($M_{contact}$ = −0.178) and on celebrity and logo ($M_{contact}$ = −0.071) in contact conditions but significantly longer initial fixation duration on celebrity in no-contact conditions ($M_{VEproduct}$ = −0.001; t (34) = 2.42, $p < .05$; M_{VElogo} = 0.12, t (34) = 1.68, $p < .10$[+]). This pattern reflects that the vampire effect is attenuated with an enhanced impression on brand logo and advertised product under celebrity–product contact condition.

Finally, there were no significant differences across the two (contact versus no-contact) conditions in terms of total fixation duration between celebrity and product; neither was there a significant different between celebrity and logo. It may suggest, given that the average fixation time on a static display ad was about 266 ms (Rayner et al. 2001), that the display time in this experiment was long enough for viewers to look at various stimuli repeatedly. By and large, the eye-tracking data in Study 3 do support hypothesis 3.

Discussion

Study 3 identifies an visual ad design that may help weaken the vampire effect. Viewers typically first fixate on the celebrity endorser as an accessible and emotionally significant stimulus in an ad; then their gaze will follow the body gesture or eye contact of the celebrity to the advertised product when there is endorser–product contact. We find that the gaze and bodily direction of the endorser can influence the allocation of visual attention by viewers, and a shorter delay in attention shift may therefore result in better brand recall. This study thus illustrates that building a physical connection between the endorser and advertised offering helps combat the vampire effect.

General discussion

Consumer attention is often regarded as the scarcest resource in today's competitive marketing landscape (Davenport and Beck 2001; Myers et al. 2020). This problem has led to the regular use of celebrity endorsements in advertising. While the use of celebrity in advertising garners abundant positive outcomes (not limited to favorable brand attitudes, identification, or aspiration effects) that have been well documented in previous research, practitioners and researchers alike worry that celebrities may overshadow the advertised brand, capturing consumer attention but not boosting recall of and attitude toward product. In this article, we offered further evidence of the vampire effect introduced in recent celebrity endorsement studies (e.g., Erfgen, Zenker, and Sattler 2015; Tomak and Aksoy 2021; Pelau et al. 2022) and, more importantly, advanced the current literature on how to mitigate such an effect using an eye-tracking approach. Studying eye movements enables

researchers to understand how consumers process visual information in ads as an important initial stage of information processing and to discover which visual elements draw attention.

Benefiting from the eye-tracking technology in unlocking the black box of celebrity attraction and its impact on brands, this research unfolds a number of key findings that contribute to the current understanding of one of the underexplored drawbacks of celebrity endorsement. First, results from a large-scale eye-tracking examination of real-life ads of Study 1 indicated the existence of the vampire effect across various product categories. Brand recall and attention to the advertised product were jeopardized when the ad contained a celebrity endorser. Second, by reducing screen size, Study 2 showed that the vampire effect could be lessened by increasing visual proximity between product and endorser, as it facilitates information extraction from the focal vision field. Third, Study 3 delivers the important insight that endorser–product contact is crucial, either through eye contact or body contact, as it helps direct consumer attention from the celebrity to the advertised product.

Theoretical implications

Celebrity endorsement is well-known as an attention-grabbing tactic in advertising. The benefits of enhancing brand awareness, image, and attributes are well documented in previous research, yet the very nature of incorporating celebrity endorsers who dominate the ad is underexplored. While the effectiveness of celebrity endorsers is still equivocal, findings from three eye-tracking studies in this article enrich current endorsement literature by highlighting the drawback of employing celebrities who have the potential of drawing consumer attention away from the core brand message. Through a multiple-brand, real-life, and experimental eye-tracking design, this article agrees there is reason to be concerned that celebrities may have a vampire effect on brand promotion. The fact that the audiences remember the brand endorser does not guarantee they will also recall the promoted message and brand. Given the natural tendency for viewers to gravitate toward human faces (especially familiar ones, like those of celebrities), it is alarming to discover that the vampire effect is prevalent in various conditions: across product categories, brands (foreign and domestic), and celebrities (varying specializations in Study 1 and gender in Study 3).

In the face of such an effect, previous literature suggested a careful selection of celebrity in relation to brand congruence, consideration of establishing long-term partnership, as well as the possible use of unknown yet equally attractive endorsers (Erfgen, Zenker, and Sattler 2015). This article also contributes to celebrity endorsement research by proposing and validating two mitigations of the vampire effect through altering visual and cognitive proximity between the celebrity and the endorsed brand. In particular, higher visual proximity (information centered in the focal visual field) enables viewers to capture information effectively without shifting their gaze. Cognitive proximity, on the other hand, involves physical contact between the endorser and the product. Recent research in cognitive neuroscience (e.g., Chau et al. 2014; Chau et al. 2020) suggests that even though attention is attracted by salient stimuli (such as celebrities in ads), these stimuli can be effective in redirecting attention to other stimuli (such as products) in specific ways if presented properly. Thus, this study emphasizes the importance of having celebrity–brand contact in ads, providing a visual cue for viewers to follow the gaze or bodily direction of the celebrity onto an endorsed product. This article incorporates a cognitive attention approach in offering the two mitigating mechanisms, which further enriches the few established studies on the vampire (or overshadowing) effect of celebrity endorsement.

Practical implications

Optimizing—not maximizing—the use of celebrities
This article raises an important yet previously neglected question about the magnitude of celebrity endorsement. As brands pay top dollar for celebrity endorsement contracts, they are more

likely to try to maximize their use of celebrities in brand promotions to justify these high costs. Instead, brands should look to optimize the star power in endorsements to avoid the vampire effect. Finding the sweet spot between an attention-grabbing endorser and a celebrity overshadowing the brand or product in advertising is therefore an important topic of investigation for advertisers and scholars alike.

Adapting ads to smaller screens

People's screen time on mobile devices and tablets has continued to increase exponentially in recent years. They seek information and watch everything from ads to movies on these mobile devices. This is perhaps good news for advertisers who wish to adopt celebrity endorsements in their campaigns, as this study suggests that the vampire effect appears to weaken on smaller screens. Nonetheless, mobile consumption grows daily, and attention is short; in turn, the bar for capturing attention and interest continues to move ever higher. As a result, brands are constantly adapting the content they already own to match mobile audiences. To many brands, PockeTVC (pocket TV commercials) is a low-cost shortcut to adapt their TV assets to mobile screens by trimming the original videos to be shorter or picking one or two keyframes to bring the message/punchline to the forefront (Creative Review 2017). This study suggests that for PockeTVC to be most effective, advertisers should determine which crops and ratios of ad elements can best perform on mobile screens. Realizing video consumption on mobile devices means a shorter attention time span yet a more efficient viewing size, an important question for ad design is how to proportion the celebrity endorser (the attention-grabbing element) and the core product message to make the most of the visual space and attention. Similarly, the question of whether a static ad or a video ad containing a celebrity is more effective on mobile devices will be an interesting one to explore in future research.

Designing ads with celebrity–product contact

A strong suggestion based on results from our studies is that using celebrity–product contact, whether it is body contact or eye contact, will help mitigate the vampire effect. It is common to see ads with a front-facing portrait or even a close-up of the celebrity endorser, as such ads may seem more prestigious and aesthetically pleasing. This study, however, reveals that viewers are likely to focus their attention on the celebrity and not the core message. This effect is worsened if the endorser does not have any contact with the advertised product. The eye-tracking data indicate that viewers' attention tends to follow the eye movements and body gestures of the celebrity, resulting in a shorter delay in fixation on the advertised product if the endorser is in contact with the promoted item. This finding offers a quick and effective implication for designing ad visuals. To minimize the vampire effect, designers need to consider a visually close celebrity–brand contact, perhaps having the celebrity hold, use, or look at the advertised offering. In other words, it is the brand or the product that should be placed in a prominent perceptual position—not the celebrity, who holds the attention-grabbing power.

Limitations and future research directions

Despite the use of eye-tracking technology that enables an objective approach to examine the existence and possible alleviation of the vampire effect, this study has limitations that indicate directions for future research. First, this study is an initial attempt using a cognitive approach to investigate the underlying mechanism of the vampire effect. The primary focus of this study is to understand visual attention as a critical first step of celebrity endorsement effectiveness; future studies may benefit from exploring downstream behavioral and attitudinal measures, including actual purchase and brand favorability, to justify the use of celebrity endorsers. Relatedly, it would be interesting to weigh the vampire effect and the positive effects of celebrity

endorsement found in previous literature to grasp the fuller picture of star power in advertising. Second, we sampled ads in a naturalistic setting containing celebrity endorsers from different specializations, and we tested the vampire effect on TV commercials and print ads discretely. Testing the magnitude of the vampire effect across various conditions—celebrity characteristics (e.g., varying perceived popularity), viewer characteristics (e.g., fans versus nonfans), platform nature (e.g., cross-platform viewing)—will provide much-needed insights into future advertising strategies. Third, studies conducted thus far have fixed the viewing time of ads to enhance the accuracy of eye-tracking data collection. To ensure better external validity, future studies can present a more realistic empirical setup by giving participants the option to skip ads. Analyzing eye movement on the ad and other distractors (e.g., the countdown timer to skip ads) would be fruitful for understanding overall ad effectiveness.

In conclusion, by using an eye-tracking approach, this article provides robust evidence that the vampire effect exists and that audiences are attracted more to the celebrity endorser than to the advertised product. We also offer several important insights for mitigating the vampire effect through better adaptations of ads on different screen sizes and an establishment of endorser–product contact in advertisements.

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References

Amos, C., G. Holmes, and D. Strutton. 2008. "Exploring the Relationship between Celebrity Endorser Effects and Advertising Effectiveness: A Quantitative Synthesis of Effect Size." *International Journal of Advertising* 27 (2): 209–234. doi:10.1080/02650487.2008.11073052.

Bigne, E., A. Simonetti, C. Ruiz, and S. Kakaria. 2021. "How Online Advertising Competes with User-Generated Content in TripAdvisor. A Neuroscientific Approach." *Journal of Business Research* 123: 279–288. doi:10.1016/j.jbusres.2020.10.010.

Branigan, E., and A. Mitsis. 2014. "Reach for Generation Y: Using Celebrity Endorsement to Communicate about Nonprofit Causes with Young People in Australia." *International Journal of Nonprofit and Voluntary Sector Marketing* 19 (4): 314–321. doi:10.1002/nvsm.1503.

Carlson, B. D., D. T. Donavan, G. D. Deitz, B. C. Bauer, and V. Lala. 2020. "A Customer-Focused Approach to Improve Celebrity Endorser Effectiveness." *Journal of Business Research* 109: 221–235. doi:10.1016/j.jbusres.2019.11.048.

Chau, B. K., N. Kolling, L. T. Hunt, M. E. Walton, and M. F. Rushworth. 2014. "A Neural Mechanism Underlying Failure of Optimal Choice with Multiple Alternatives." *Nature Neuroscience* 17 (3): 463–470. doi:10.1038/nn.3649.

Chau, B. K., C. K. Law, A. Lopez-Persem, M. C. Klein-Flügge, and M. F. Rushworth. 2020. "Consistent Patterns of Distractor Effects during Decision Making." *eLife* 9: e 53850. doi:10.7554/eLife.53850.

Choi, S. M., M. Lee, and H. J. Kim. 2005. "Lessons from the rich and famous: A cross-cultural comparison of celebrity endorsement in advertising." *Journal of Advertising* 34 (2): 85–98.

Choi, S. M., and N. J. Rifon. 2012. "It is a Match: The Impact of Congruence between Celebrity Image and Consumer Ideal Self on Endorsement Effectiveness." *Psychology & Marketing* 29 (9): 639–650. doi:10.1002/mar.20550.

Compton, R. J. 2003. "The Interface between Emotion and Attention: A Review of Evidence from Psychology and Neuroscience." *Behavioral and Cognitive Neuroscience Reviews* 2 (2): 115–129. doi:10.1177/153458230300 2002003.

Costanzo, P. J., and J. E. Goodnight. 2006. "Celebrity Endorsements: Matching Celebrity and Endorsed Brand in Magazine Advertisements." *Journal of Promotion Management* 11 (4): 49–62.

Creative Review 2017. Insights: Simple Ways to Adapt TV Adverts for Facebook and Instagram. Retrieved from https://www.creativereview.co.uk/adapt-tv-adverts-for-facebook-and-instagram/

Davenport, T. H., and J. C. Beck. 2001. "The Attention Economy." *Ubiquity* 2001 (May): 1-es. doi:10.1145/375348.376626.

De Crespigny, A. 2021. 6 Largest Athlete Endorsement Deals in the Modern Era. https://manofmany.com/ entertainment/sport/athlete-endorsement-deals

Erfgen, C., S. Zenker, and H. Sattler. 2015. "The Vampire Effect: When Do Celebrity Endorsers Harm Brand Recall?" *International Journal of Research in Marketing* 32 (2): 155–163. doi:10.1016/j.ijresmar.2014.12.002.

Eriksen, C. W., and J. E. Hoffman. 1972. "Temporal and Spatial Characteristics of Selective Encoding from Visual Displays." *Perception & Psychophysics* 12 (2): 201–204. doi:10.3758/BF03212870.

Eriksen, C. W., and J. D. St. James. 1986. "Visual Attention Within and Around the Field of Focal aAttention: A Zoom Lens Model." *Perception & Psychophysics* 40 (4): 225–240.

Falsarella, C. R. B. M., J. H. C. de Oliveira, and J. D. M. E. Giraldi. 2017. "The Influence of Celebrity Endorsement on Visual Attention: An Eye-Tracking Study in Brazil." *Academy of Marketing Studies Journal* 21 (1): 1–14.

Farnsworth, B. 2020. 10 Most Used Eye Tracking Metrics and Terms. https://imotions.com/blog/10-terms-metrics-eye-tracking/

Feldman, J. M., and J. G. Lynch. 1988. "Self-Generated Validity and Other Effects of Measurement on Belief, Attitude, Intention, and Behavior." *Journal of Applied Psychology* 73 (3): 421–435. doi:10.1037/0021-9010.73.3.421.

Halder, D., D. Pradhan, and H. R. Chaudhuri. 2021. "Forty-Five Years of Celebrity Credibility and Endorsement Literature: Review and Learnings." *Journal of Business Research* 125: 397–415. doi:10.1016/j.jbusres.2020.12.031.

Hearn, A., and S. Schoenhoff. 2016. "From Celebrity to Influencer: Tracing the Diffusion of Celebrity Value across the Data Stream." In *A Companion to Celebrity*, edited by P. D. Marshall and S. Redmond, 194–212. London, UK: Wiley.

Holt, D. B., and C. J. Thompson. 2004. "Man-of-Action Heroes: The Pursuit of Heroic Masculinity in Everyday Consumption." *Journal of Consumer Research* 31 (2): 425–440. doi:10.1086/422120.

Hussain, S., T. C. Melewar, C. V. Priporas, P. Foroudi, and C. Dennis. 2020. "Examining the Effects of Celebrity Trust on Advertising Credibility, Brand Credibility and Corporate Credibility." *Journal of Business Research* 109: 472–488.

Hung, K. 2014. "Why Celebrity Sells: A Dual Entertainment Path Model of Brand Endorsement." *Journal of Advertising* 43 (2): 155–166. doi:10.1080/00913367.2013.838720.

Ilicic, J., and C. M. Webster. 2014. "Eclipsing: When Celebrities Overshadow the Brand." *Psychology & Marketing* 31 (11): 1040–1050. doi:10.1002/mar.20751.

Jia, X., K. Hung, and K. Zhang. 2020. "Celebrity Fans in China: Motives, Characteristics, and Marketing Impacts." In *Handbook of Research on the Impact of Fandom in Society and Consumerism*, edited by Cheng Lu Wang, 104–126. Hershey, PA: IGI Global.

Kahle, L. R., and P. M. Homer. 1985. "Physical Attractiveness of the Celebrity Endorser: A Social Adaptation Perspective." *Journal of Consumer Research* 11 (4): 954–961. doi:10.1086/209029.

Kamins, M. A. 1990. "An Investigation into the "Match-up" Hypothesis in Celebrity Advertising: When Beauty May Be Only Skin Deep." *Journal of Advertising* 19 (1): 4–13. doi:10.1080/00913367.1990.10673175.

Keller, K. L. 1993. "Conceptualizing, Measuring, and Managing Customer-Based Brand Equity." *Journal of Marketing* 57 (1): 1–22. doi:10.1177/002224299305700101.

Kim, K. J., and S. S. Sundar. 2014. "Does Screen Size Matter for Smartphones? Utilitarian and Hedonic Effects of Screen Size on Smartphone Adoption." *Cyberpsychology, Behavior and Social Networking* 17 (7): 466–473. doi:10.1089/cyber.2013.0492.

Knoll, J., and J. Matthes. 2017. "The Effectiveness of Celebrity Endorsements: A Meta-Analysis." *Journal of the Academy of Marketing Science* 45 (1): 55–75. doi:10.1007/s11747-016-0503-8.

Kuhn, G., and A. Kingstone. 2009. "Look Away! Eyes and Arrows Engage Oculomotor Responses Automatically." *Attention, Perception & Psychophysics* 71 (2): 314–327. doi:10.3758/APP.71.2.314.

Kuvita, T., and M. Karlicek. 2014. "The Risk of Vampire Effect in Advertisements Using Celebrity Endorsement." *Central European Business Review* 3 (3): 16–22. doi:10.18267/j.cebr.89.

Maniar, N., E. Bennett, S. Hand, and G. Allan. 2008. "The Effect of Mobile Phone Screen Size on Video Based Learning." *Journal of Software* 3 (4): 51–61. doi:10.4304/jsw.3.4.51-61.

McCracken, G. 1989. "Who is the Celebrity Endorser? Cultural Foundations of the Endorsement Process." *Journal of Consumer Research* 16 (3): 310–321. doi:10.1086/209217.

McCutcheon, L. E., R. Lange, and J. Houran. 2002. "Conceptualization and Measurement of Celebrity Worship." *British Journal of Psychology (London, England: 1953)* 93 (Pt 1): 67–87. doi:10.1348/000712602162454.

McIntyre, D. A. 2017. Nike is Worth Performing Dow Stock of 2016- Down 19%. https://finance.yahoo.com/news/nike-worst-performing-dow-stock-141531665.html

Mehta, A. 1994. "How Advertising Response Modeling (ARM) Can Increase Ad Effectiveness." *Journal of Advertising Research* 34: 62–74.

Menon, G., P. Raghubir, and N. Schwarz. 1995. "Behavioral Frequency Judgments: An Accessibility-Diagnosticity Framework." *Journal of Consumer Research* 22 (2): 212–228. doi:10.1086/209446.

Myers, S. D., G. D. Deitz, Huhmann B. A., Jha S, and Tatara J. H. 2020. "An Eye-tracking Study of Attention to Brand-Identifying Content and Recall of Taboo Advertising." *Journal of Business Research* 111: 176–186.

Nistoreanu, P., C. Pelau, and L. Lazar. 2019. "Product versus Celebrity–An Eye-Tracking Experiment for the Determination of the Attention-Catcher in Advertising." In *Proceedings of the International Conference on Business Excellence* 13 (1): 1079–1086. doi:10.2478/picbe-2019-0094.

Olmedo, Alegría, E. J. Milner-Gulland, Daniel W. S. Challender, Laure Cugnière, Huong Thi Thu Dao, Linh Bao Nguyen, Ana Nuno, et al. 2020. "A Scoping Review of Celebrity Endorsement in Environmental Campaigns and Evidence for Its Effectiveness." *Conservation Science and Practice* 2 (10): e261. doi:10.1111/csp2.261.

Palermo, R., and G. Rhodes. 2007. "Are You Always on My Mind? A Review of How Face Perception and Attention Interact." *Neuropsychologia* 45 (1): 75–92. doi:10.1016/j.neuropsychologia.2006.04.025.

Pieters, R., and M. Wedel. 2004. "Attention Capture and Transfer in Advertising: Brand, Pictorial, and Text-size Effects." *Journal of marketing* 68 (2): 36–50.

Praet, C. 2001, June. "Japanese Advertising, the World's Number One Celebrity Showcase? A Cross-Cultural Comparison of the Frequency of Celebrity Appearances in TV Advertising." In *Proceedings of the 2001 Special Asia-Pacific Conference of the American Academy of Advertising*, edited by M. Roberts and R. L. King, 6–13. Japan: Kisarazu.

Pegna, A. J., A. Khateb, C. M. Michel, and T. Landis. 2004. "Visual Recognition of Faces, Objects, and Words Using Degraded Stimuli: Where and When It Occurs." *Human Brain Mapping* 22 (4): 300–311. doi:10.1002/hbm.20039.

Pelau, C., P. Nistoreanu, L. Lazar, and R. Badescu. 2022. "Celebrity vs. Product: A Neuroscientific Approach to the Distractors in Food Advertising for Sustainable Marketing." *Sustainability* 14 (19): 12768. doi:10.3390/su141912768.

Pringle, H. 2004. *Celebrity Sells*. Hoboken, NJ: John Wiley & Sons.

Rayner, K., C. M. Rotello, A. J. Stewart, J. Keir, and S. A. Duffy. 2001. "Integrating Text and Pictorial Information: Eye Movements When Looking at Print Advertisements." *Journal of experimental psychology: Applied* 7 (3): 219

Reeves, B., A. Lang, E. Y. Kim, and D. Tatar. 1999. "The Effects of Screen Size and Message Content on Attention and Arousal." *Media Psychology* 1 (1): 49–67. doi:10.1207/s1532785xmep0101_4.

Rifon, N. J., S. M. Choi, C. S. Trimble, and H. Li. 2004. "Congruence Effects in Sponsorship: The Mediating Role of Sponsor Credibility and Consumer Attributions of Sponsor Motive." *Journal of Advertising* 33 (1): 30–42. doi:10.1080/00913367.2004.10639151.

Rizvi, W. H. 2020. "Brand Visual Eclipse (BVE): When the Brand Fixation Spent is Minimal in Relation to the Celebrity." In *Information Systems and Neuroscience: NeuroIS Retreat 2019*, edited by Fred D. Davis et al., 295–303. Switzerland: Springer International Publishing.

Ro, T., C. Russell, and N. Lavie. 2001. "Changing Faces: A Detection Advantage in the Flicker Paradigm." *Psychological Science* 12 (1): 94–99. doi:10.1111/1467-9280.00317.

Schimmelpfennig, C., and J. B. Hunt. 2020. "Fifty Years of Celebrity Endorser Research: Support for a Comprehensive Celebrity Endorsement Strategy Framework." *Psychology & Marketing* 37 (3): 488–505. doi:10.1002/mar.21315.

Shepherd, S. V. 2010. "Following Gaze: Gaze-following Behavior as a Window into Social Cognition." *Frontiers in Integrative Neuroscience* 4: 5. doi:10.3389/fnint.2010.00005.

Speck, P. S., and M. T. Elliott. 1997. "Predictors of Advertising Avoidance in Print and Broadcast Media." *Journal of Advertising* 26 (3): 61–76. doi:10.1080/00913367.1997.10673529.

Till, B. D. 1998. "Using Celebrity Endorsers Effectively: Lessons from Associative Learning." *Journal of Product & Brand Management* 7 (5): 400–409. doi:10.1108/10610429810237718.

Till, B. D., and M. Busler. 1998. "Matching Products with Endorsers: Attractiveness versus Expertise." *Journal of Consumer Marketing* 15 (6): 576–586. doi:10.1108/07363769810241445.

Tong, F., and K. Nakayama. 1999. "Robust Representations for Faces: Evidence from Visual Search." *Journal of Experimental Psychology: Human Perception and Performance* 25 (4): 1016–1035.

Tomak, G., and R. Aksoy. 2021. "Evaluation of Celebrity Endorsement Effectiveness within the Context of Vampire Effect by Using Eye Tracking Technique." *Hacettepe Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi* 39 (1): 149–172.

Um, N. H., and S. Kim. 2016. "Determinants for Effects of Celebrity Negative Information: When to Terminate a Relationship with a Celebrity Endorser in Trouble?" *Psychology & Marketing* 33 (10): 864–874. doi:10.1002/mar.20923.

Vinikas, I. 2022. Celebrity Endorsement: How to Use a Celebrity for Your Campaigns and Events. https://corp.kaltura.com/blog/celebrity-endorsement/

Wedel, M., and R. Pieters. 2014. "Looking at Vision: Eye/Face/Head Tracking of Consumers for Improved Marketing Decisions." In *The Routledge Companion to the Future of Marketing*, edited by Luiz Moutinho, Enrique Bigné, and Ajay K. Manrai, 212–225. New York: Routledge.

Zhang, K., and K. Hung. 2020. "The Effect of Natural Celebrity–Brand Association and Para-Social Interaction in Advertising Endorsement for Sustainable Marketing." *Sustainability* 12 (15): 6215. doi:10.3390/su12156215.

Appendix A. Ad manipulation example from Study 3

No-Contact Condition   **Contact Condition**

Note. Celebrity and brand images are blurred for legal and copyright reasons. The images were intact in the experiment. Three areas of interest were denoted: celebrity face, product, and brand logo.