Evaluating the Influence of Celebrity Endorsement in Advertising: Insights from Eye-Tracking Analysis

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Abstract

In an increasingly competitive business landscape, many brand owners turn to celebrity endorsements as a marketing strategy to promote their products. This study explores its impact to ascertain the effectiveness of this celebrity-driven approach in communicating brand-related information and influencing consumers. Participants in this research were randomly assigned to two groups, ensuring a balanced gender distribution. Each group viewed different advertisements: one featuring celebrities as models and the other utilizing non-celebrity models. Throughout the experiment, an eye-tracking device recorded participants' gaze patterns. The eye-tracking results reveal celebrity endorsements enhance their focus on the promoted product. Furthermore, an intriguing gender-based distinction emerges, with female participants demonstrating greater attention for male models over their female counterparts. Additionally, post-trial surveys indicate that a higher proportion of female participants are inclined to consider celebrities as influential factors in their purchasing decisions. This study contributes valuable insights into the phenomenon of the "celebrity effect" in advertising. It enhances the understanding of how celebrities impact consumer attention and purchasing decisions, offering brand owners a deeper understanding of leveraging this strategy effectively in their product promotion efforts.

Keywords: Celebrity effect, Celebrity endorsement, Advertisements, Brand, Product, Shopping decision, Eye-tracking

1. Introduction

In the fiercely competitive marketplace, brand owners endeavor to influence consumers and their purchasing behavior through advertising. Individuals are inundated with a substantial volume of advertisements daily, estimated at approximately 4,000 to 10,000 exposures per person per day, as indicated in a prior study (Simpson, 2022). Consequently, the capacity to capture consumers' attention emerges as the fundamental prerequisite for the efficacy of an advertisement. One prevalent strategy employed for this purpose is celebrity advertising. Celebrity advertising involves the integration of a product brand with a celebrity's image or reputation, to augment the product's perceived value (Pringle & Binet, 2005). Generally, brand owners regard celebrity endorsements as a potent marketing strategy that draws consumers' attention to their products (Knoll & Matthes, 2017; Nistoreanu, 2019). In Western countries, it is estimated that around 25-30% of advertisements feature celebrities as spokespersons, while in Asian countries, this figure escalates to as high as 40% (Schimmelpfennig & Hunt, 2020).

With increasing brand owners embracing celebrity advertising strategies, it has become progressively imperative to fathom the impact of celebrity influence on consumers and their purchasing decisions. Previous research in this domain has yielded disparate conclusions. While some studies posit that advertisements featuring celebrity endorsements successfully capture customers' attention, others contend that the presence of celebrities diverts attention away from the promoted products (Shen, 2013; Li, 2015; Bergkvist, 2016). To enhance the comprehension of the celebrity marketing strategy, this study delves deeper into the influence of celebrities in advertisements. Notably, this research encompasses female and male celebrities as stimuli and considers consumers' gender as a variable of interest. Distinguishing from previous empirical studies, this investigation employs eye-tracking technology, generating precise and quantitative gaze data. The ensuing results chronicle how individuals engage with advertisements, offering a direct reflection of gaze attention distribution. The findings of this study hold the potential to furnish quantitative and precise insights into the role of celebrities in advertisements, thereby enriching our understanding of the celebrity marketing strategy.

2. Methods

2.1 Participants

In this study, 21 participants (Mean age = 26.86, Standard Deviation = 6.03) were randomly recruited from an office building in Shanghai, China. The sample consisted of

11 males and ten females, with an effort to maintain a roughly equal gender ratio in each group. All participants were briefed about the study's procedures, volunteered to participate, and provided informed consent before commencement. As a token of appreciation, they received a gift following their participation.

2.2 Stimuli

The study employed four distinct product advertisements as stimuli. In Group A, non-celebrities served as models in the advertisements, while in Group B, celebrities were featured. To control for variables, the advertisements in Group A were edited using Photoshop software, substituting the celebrities' faces with non-celebrity models while keeping all other elements consistent between the two groups. The four celebrities featured in Group B comprised two females and two males, all of whom were nationally renowned movie stars with widespread recognition among individuals of varying ages and genders, ensuring participant familiarity with these celebrities.

2.3 Design and Procedure

This study employed a between-subjects design, with the independent variable being the presence or absence of celebrities in the advertisements. Before the experiment, participants completed informed consent forms and provided demographic information, including their gender and age. Participants were then randomly assigned to one of the two experimental groups to maintain a 1:1 gender ratio within each group.

During the experiment, participants were seated in front of a screen connected to a laptop. An eye-tracking device (Tobii 4C) was employed to record participants' gaze patterns. Calibration was conducted to ensure accurate eye movement data collection. Participants were instructed to minimize head movement to maintain data accuracy after a successful calibration.

Participants were presented with a set of advertising posters, as mentioned earlier. Group A viewed four posters featuring non-celebrity faces, while Group B viewed an alternative set featuring celebrities' faces. Each poster was displayed on the screen for 12 seconds, with the sequence identical for each group. The overall duration of the experiment was approximately five minutes. Areas of interest (AOI) for each advertisement were defined, specifically focusing on the face part (Face) and the product part (Product). Following the trial, gaze data from all participants were exported for subsequent analysis.

Participants were administered a post-trial questionnaire with the following inquiries: 1) Are you familiar with the models? 2) Would celebrity endorsement influence your purchasing decisions for a product?

2.4 Data Analysis

To examine the impact of celebrities in advertisements, statistical analyses of two eye-tracking parameters, total fixation duration (TFD) and fixation count (FC), were conducted. These parameters illuminate the allocation of attention among participants when viewing advertisements. T-test analyses comparing Group A and Group B were performed for each AOI. Additionally, within-group T-test analyses were employed to assess participants' attention distribution between the Face and Product AOIs.

Two further analyses were conducted to explore potential gender-based influences on the results. One considered the gender of the featured celebrities, while the other took into account the gender of the participants themselves.

3. Results

3.1 TFD and FC Analyses between Group A and Group B

Table 1 presents the results of TFD and FC analyses between Group A and Group B. T-test outcomes reveal no significant difference in TFD between Group A (Mean = 3.30, SD = 2.82) and Group B (Mean = 2.61, SD = 1.56) for the Face area ($t = 1.06$, $p > 0.05$). Similarly, there is no significant difference in TFD between Group A (Mean = 3.85, SD = 2.36) and Group B (Mean = 4.51, SD = 1.90) for the Product area ($t = 1.05$, $p > 0.05$). The results also indicate no significant difference in FC between Group A (Mean = 9.15, SD = 17.20) and Group B (Mean = 7.32, SD = 12.16) for the Face area ($t = 1.09$, $p > 0.05$) and no significant difference in TFD between Group A (Mean = 11.78, SD = 9.27) and Group B (Mean = 13.34, SD = 15.08) for the Product area ($t = 1.03$, $p > 0.05$).

3.2 TFD and FC Analyses between Female and Male Subjects

Table 2 presents TFD and FC analyses between female and male subjects. For TFD among female subjects, there is a significant difference between Group B Face (Mean = 2.31, SD = 0.83) and Group A Face (Mean = 4.12, SD = 1.37) ($t = 1.86$, $p < 0.05$). However, female subjects show no significant difference in FC between Group A Face (Mean = 9.63, SD = 3.52) and Group B Face (Mean = 7.20, SD = 2.06) ($t = 1.86$, $p > 0.05$). Among male subjects, T-test results reveal no significant difference in TFD for Group A Face (Mean = 2.06, SD = 1.38) and Group B Face (Mean = 2.86, SD = 1.55) ($t = 1.89$, $p > 0.05$). Similarly, there is no significant difference in FC between Group A Face (Mean = 8.44, SD = 5.46) and Group A Face (Mean = 7.42, SD = 4.57) ($t = 1.94$, $p > 0.05$).

3.3 TFD and FC Analyses for Female and Male Models

Table 3 presents TFD and FC analyses for male and female participants. Among male participants, T-test results show no significant difference in TFD ($t = 1.74$, $p > 0.05$) and FC ($t = 1.75$, $p > 0.05$) between females (Mean TFD = 2.26, SD = 2.89; Mean FC = 7.05, SD = 3.98) and male (Mean TFD = 2.82, SD = 3.42; Mean FC = 8.60, SD = 5.84) models. For female participants, T-test results indicate no significant difference in TFD ($t = 1.72$, $p > 0.05$) between male (Mean TFD = 3.76, SD = 1.79) and female (Mean TFD = 2.84, SD = 1.88) models. However, for female participants' FC, there is a significant difference ($t = 1.77$, $p < 0.05$) between male (Mean FC = 10.55, SD = 5.28) and female (Mean FC = 6.50, SD = 2.09) models.

3.4 Within-Group T-test Analyses of Products and Faces

As presented in Table 1, in Group B, significant differences ($t = 1.72$, $p < 0.05$) were found for TFD and FC between Product (Mean TFD = 4.51, SD = 1.38; Mean FC = 13.34, SD = 3.88) and Face (Mean TFD = 2.61, SD = 1.25; Mean FC = 7.32, SD = 3.49). However, in Group A, there were no significant differences ($t = 1.73$, $p > 0.05$) in TFD and FC between Product (Mean TFD = 3.85, SD = 1.53; Mean FC = 11.78, SD = 3.04) and Face (Mean TFD = 3.30, SD = 1.68; Mean FC = 9.15, SD = 4.15).

Table 1. TFD and FC of Face and Product in Group A and Group B

	TFD (s)		FC	
	Group A	Group B	Group A	Group B
Face	3.30	2.60	9.15	7.32
Product	3.85	4.51	11.78	13.34

Table 2. TFD and FC for Faces of Female and Male Subjects

	TFD(s)		FC	
	Females	Males	Females	Males
Group A	4.12	2.06	9.63	8.44
Group B	2.31	2.86	7.20	7.42

Table 3. TFD and FC for Female and Male Models

	TFD(s)		FC	
	Female Models	Male Models	Female Models	Male Models
Male	2.26	2.82	7.05	8.60
Female	2.84	3.76	6.50	10.55

4. Discussion

In the fiercely competitive market, brand owners employ diverse marketing strategies to communicate their brand messages to consumers. The use of celebrities in advertising, a strategy with a long history (Charles Atkin & Martin Block, 1983), has been explored to understand its impact on consumers. The study aims to provide brand owners insights on effectively employing celebrities in their promotional efforts. Eye-tracking technology was incorporated into this study to investigate how individuals allocate attention while viewing advertisements. The eye-tracking parameters, Total Fixation Duration (TFD), and Fixation Count (FC) served as indicators of participants' gaze attention during the process. Additionally, a post-trial survey was conducted to gather valuable insights.

The results reveal no significant differences in TFD and FC for the Face and Product areas between Group A and Group B. These findings contrast with those of Li (2015), who argued that celebrities could draw more attention to the product. In Li's study, the non-celebrity group lacked any model, and prior research has shown that human faces in advertisements are inherently attractive to audiences (Palcu et al., 2017). Hence, compared to the no-model group, the advertisement employing celebrities as models garnered more attention, potentially explaining the inconsistency in conclusions. Group B's results indicate a significant difference, with people directing more attention to the product than the celebrity model. This suggests that using celebrities as models in advertisements shifts viewers' attention toward the advertised products. Given that human cognitive resources are limited (Ella Gill, 2018) and people are more familiar with celebrity faces, this familiarity conserves cognitive resources. Consequently, when viewing celebrity-endorsed advertisements, these saved cognitive resources are allocated to the products. In contrast, the non-celebrity group may allocate more time to process unfamiliar individuals, leaving less time for the products. A previous study also found that advertisements featuring non-celebrity faces attract more attention to brand logos and products than advertisements with celebrity faces. The differing experimental designs between studies may contribute to these contrasting conclusions. In Shen's study, the two target advertisements were displayed alongside four interfering images, while this study presented only one advertisement at a time, reflecting different real-world scenarios.

Furthermore, the results indicate that women tend to pay more attention to advertisements featuring non-celebrity models than those featuring celebrities. The post-trial survey supports this finding, with more female participants suggesting that when making purchasing decisions and

encountering familiar celebrities, they might be influenced by the celebrities. Therefore, when they recognize celebrities, they do not allocate additional attention to them. Since unfamiliar stimuli could attract more attention (Ella Gill, 2018). Compared to familiar celebrities, non-celebrities are notably more novel and capture subjects' attention.

The T-test results revealed that the model's gender had no significant impact on male participants; however, it did significantly affect female participants' Fixation Count (FC). Female participants exhibited a substantial increase in FC when male models were featured. This indicates female participants paid more attention to male models. When considering entertainers in the entertainment industry, it becomes evident that male stars typically enjoy a significantly larger fan base than their female counterparts at the same celebrity level. Moreover, male stars tend to possess a higher commercial value due to the presence of dedicated and high-spending female fans (Jiang, 2022). These factors collectively support the observed influence of male models on female participants in this study.

While this study contributes valuable insights, future research has room for improvement. The study's sample size of participants and advertising posters was relatively small, and future studies could benefit from larger samples to enhance statistical significance. Exploring consumer demographics such as age and cultural background may yield differing results. Additionally, the type of products endorsed could be considered in future investigations.

5. Conclusion

This study examined the impact of celebrity endorsement in advertisements by comparing celebrity-endorsed and non-celebrity-endorsed advertisements using eye-tracking parameters, fixation duration, and fixation count. The results indicate that employing celebrities as models in advertisements can capture consumers' attention, particularly among female subjects. Additionally, according to the post-trial survey, most participants suggested that celebrities in advertisements could influence their attitudes toward brands or purchasing decisions, with female participants exhibiting a stronger tendency. Moreover, female participants paid more attention to male models, but no preference for the model's gender was found among male participants. These findings emphasize the significant influence of the celebrity effect on consumers' decision-making processes. It should be noted that the conclusions may apply primarily to advertisements presented exclusively to consumers without other competitive advertisements, such as app open advertisements.

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