THE INFLUENCE OF CELEBRITY ENDORSEMENT ON VISUAL ATTENTION: AN EYE-TRACKING STUDY IN BRAZIL

Carla Regina Borges Matias Falsarella, University of Sao Paulo
Jorge Henrique Caldeira de Oliveira, University of Sao Paulo
Janaina de Moura Engracia Giraldi, University of Sao Paulo

ABSTRACT

This study aimed to evaluate the impact that a celebrity may exert as an endorser in print advertising with regards to visual attention. More specifically, it analyses if consumers have greater visual attention to celebrity in comparison to other stimuli present in this print ad, such as logo, name or symbol, product and non-famous people. This research features an experimental nature with the use of eye-tracking equipment technique. The experiment was carried out in Brazil with 148 subjects, the chosen celebrity was Gisele Bundchen and twelve print ads from different industries were selected to be tested. As a result, it was seen that the subjects paid more attention to brands and products endorsed by the celebrity, than to the ads with non-famous people (concerning the variables "fixation duration" and "number of visits"). It was also concluded that the celebrity diverts attention to themselves to other stimuli in a study that has considered "attention" as "visual attention", originally by the eye tracking method.

Keywords: Celebrities, Endorsement, Print Advertising, Eye Tracking, Visual Attention.

INTRODUCTION

A significant portion of the financial resources of companies is aimed at advertising campaigns, seeking to attract the attention of consumers for their products and brands, and influence their market value. Thus, to create a positive impact and even greater financial returns, companies add the endorsement of celebrities to advertising campaigns, i.e., the use of celebrities with attractive qualities that are acknowledged and admired by society. Nonetheless, attracting a consumer's visual attention is getting increasingly more difficult, considering the vast volume of advertisements available on the market (Wedel and Pieters, 2000).

Felix and Borges (2014) suggest that an analysis of celebrity endorser attractiveness remains incomplete without considering an important previous stage of information processing; which is the visual attention directed toward the endorser. Although attention is a crucial first step in any positive consumer response, they indicate that it is an important but commonly neglected antecedent in classical hierarchy-of-effects advertising models studies on endorser attractiveness.

Another concern refers to the size of the celebrity endorsement effect. Tzoumaka et al. (2016) indicate that, in general, research shows that in countries other than the USA, celebrity endorsements have significantly smaller influence on the targeted audience because of cultural differences. They believe that the practice of celebrity endorsement and its effectiveness is questioned in other country contexts and further research is needed to confirm or disconfirm the

findings of these studies. Facing this gap in the literature, we propose a study in Brazil. In Brazil, there are studies on the endorsement of celebrities and their influence on the consumers' decision-making process, especially aiming to demonstrate the effectiveness and the return expected by the company (Carneiro, 2002; Matos and Veiga, 2002; Boeing and Schurhaus, 2014). Such research had a financial emphasis on the analysis of such endorsement.

Some Brazilian studies point to the necessary characteristics of celebrities for the effective endorsement of particular products (Freire and Senise, 2011; Nascimento et al., 2013). International research also discusses the profile of the given celebrity and their subsequent valid endorsement and proposes conceptual models of these relationships between the endorser, the institution, the brand/product and the attitude and consumer purchase intent (Dal Bó et al., 2012; Goldsmith et al., 2000; Muda et al., 2014; Sheu, 2010; Shimp, 2008; Felix and Borges, 2014; Tzoumaka et al., 2016).

However, considering the perspective of neuromarketing, this topic is still little explored both in Brazil and internationally. Stanton, Armstrong and Huettel (2016) consider neuromarketing as the use of neuroscience and physiological research techniques to gain new insights into the behavior, preferences, decision making, and other aspects of human cognition and overall behavior of consumers related to marketing. To the best of our knowledge, only two international researches have examined the endorsement of celebrities from the viewpoint of neuromarketing (Stallen et al., 2010; Felix and Borges, 2014). Stallen et al. (2010) showed the celebrity endorsement by studies using one methodology of neuromarketing, the fMRI. Felix and Borges (2014) related visual attention toward the celebrity endorser with consumers' evaluations of the endorser's physical attractiveness and attitudes toward the ad. There are other works that have employed the eye-tracking technique, but in other contexts, like the influence of various types of cause-related marketing appeals on visual attention (Bae, 2016).

Although Felix and Borges (2014) used eye-tracking methodology, they did not manipulate variables as in an experiment, but rather relied on measurements from the eye tracker and the follow-up questionnaire (similarly to a survey research), which differs from our proposal to focus in the analysis of the celebrity stimulus by means of a controlled experiment.

As to fill the gaps left by the researches not addressing celebrity endorsement through different neuromarketing techniques in experimental designs, this paper approaches the issue of celebrity endorsement in advertising. We try to understand the influence of one celebrity on visual consumer attention with the support of a neuromarketing tool; the eye tracking equipment. This research seeks to answer the question: "Is there more visual attention of consumers in the "celebrity" stimulus in comparison to other stimuli?"

Then, this study aimed to evaluate the influence of the "celebrity" as an endorser in advertising regarding visual attention toward print media. Specifically, this work sought to examine whether consumers display higher visual attention to celebrity in comparison to other stimuli in the print advertisement, such as logo, name or symbol, product and non-famous persons.

Celebrity Endorsement in Communication

The endorsement, in general, is known as secondary associations generated for a brand (Keller, 2001; Kotler and Keller, 2009). The brand equity models for authors as Keller (1993) inspired the most specific types of celebrity endorsement. Engel et al. (1995), for example, propose a model that supports the idea of the effectiveness of such celebrities as endorsers of

brands and products and say they serve to attract even more attention from consumers. The authors state that endorsers work as a significant source for the advertised product because there is the significance transfer from the celebrity to the advertised product and brand. Endorsements from celebrities may exert positive impacts on important marketing metrics, such as recall and recognition, attitudes toward the ad and brand evaluations (Goldsmith et al., 2000).

Goldsmith et al. (2000) discuss the use of celebrities affecting consumer behavior with greater intensity concerning the advertising piece. In the model proposed by these authors, one can also observe that the endorser has a less intense effect on the attitude toward the brand and purchase intention when compared to the attitude toward advertising and that the credibility of the institution and the credibility of the endorser act independently in consumer behavior.

The products and the brand itself can be sold by the extent and influence of a celebrity. Erdogan and Baker (2000) indicate some reasons to use celebrities in advertising, among them: the ability of those people to transfer value to the brand; greater brand credibility by association with known figures; and greater consumer attention when there is the presence of the personality amid a large number of promotional messages.

Sheu (2010) presented a broader model, which included elements of other models cited above on how celebrities can influence consumer purchasing attitudes. That model has been influenced by multi-attribute concepts of the attitude model of Ajzen (2001) and the balanced model of celebrity influence of Mowen and Minor (1997), in which associations of celebrities with the brand and the product can improve brand positioning in the market. In the model proposed by Sheu (2010), it can be seen that the endorsement of a particular celebrity has to do with their credibility and attractiveness to create familiarity, similarity and tastes. However, these aspects must also be associated with prices, and product attributes subsequently to evidence the consumers' expectations for the product and the consequent purchase attitude.

Additionally, the celebrity endorsements topic is discussed from the particular perspective of the models mentioned regarding the necessary features to realize the endorsement. Some of these features are analyzed and the importance of these elements for making the purchasing decision is considered in several studies. Pringle and Binet (2005) defined celebrity within the marketing scope as someone who is familiar enough as to add value to communication and the brand-identification process by associating their image and reputation. Positively, fame and recognition can be the main factors for the classification of a particular celebrity. However, other attributes make them more meaningful and active. Such characteristics include: being admirable, giving good examples, sharing good values, empathy, charisma, having a successful career, leading a balanced life, not overexposing and being sympathetic to others (Nascimento et al., 2013).

Some authors propose certain attributes that celebrities must hold to become effective endorsers. Ohanian (1990) developed a scale to measure the celebrity credibility in three dimensions: reliability, attractiveness, and experience. Iddiols (2002) also indicates several factors involved in casting celebrities to communication programs as advertisements such as: evidence and acceptance of the personality; campaign longevity; the type of media on which the celebrity would appear; consumer interest level regarding the product category involved; the image and reputation of the brand and the product; the degree of brand competitiveness in the market; and public opinion regarding the celebrity. Consequently, marketers should consider these factors before casting the celebrity to endorse the brand and the product.

The model of Patel (2009) for celebrity attribute analysis includes seven inherent or perceived celebrity features: credibility, occupation, physical attractiveness, values, controversial

risks, popularity and personality as the brand user. Nascimento et al. (2013) used the TEARS (Trustworthiness, Expertise, Attractiveness, Respect and Similarity) model to find the leading Brazilian celebrities and brands that represent them with the attributes that would be essential to such celebrities. The TEARS methodology per se, suggested by Shimp (2008), already includes attributes that are necessary for the celebrity to be an effective endorser in the advertisement. They are: reliability (honesty, integrity); expertise (i.e., how much knowledge and skill the celebrity has to persuade consumers of the product/brand); attraction power (lifestyle, beauty, intellectual abilities); respect (celebrity's ability to be admired for his personal aspects and achievements); and similarity (familiarity, proximity, affinity with such celebrity)

However, there are some limitations on the use of celebrities. According to Santana and Pérez-Nebra (2008), other variables such as creativity, image, slogan, humor and music exert more impact on consumer memory than the participation of celebrities and the issue of sensuality. Silva et al. (2012) also point out limitations to the use of celebrities. The authors searched recognized brands in the market for unknown brands. As a result, it was found that the acknowledged brand exerts more influence than non-recognized brand, even with the celebrity endorsement and the high congruence between this attribute and the product and brand. Thus, it was observed that the effect of the support should vary depending on the different types of brand. According to this research, a previously recognized and established brand would not need to use celebrity endorsement. The use of this resource would be more effective if associated with brands that are still unacknowledged or even in a launch phase.

In contrast to the study of Santana and Pérez-Nebra (2008), Silva et al. (2012) and Stallen et al. (2010) showed that the celebrity endorsement impacts positively on consumer behavior. They found that personalities bring more powerful endorsement in comparison to non-famous individuals, as proved using fMRI methodology (neuromarketing technique) the positive affection mechanism behind the endorsement of these celebrities can be transferred from the celebrity to the product. Also depending on the persuasion process and the attractiveness of this celebrity, the endorsement may be more or less effective.

According to Boeing and Schurhaus (2014) the celebrity endorsement subject has been little explored in Brazil, with few studies focusing on the investigation of the returns and effectiveness related to the use of celebrity endorsement in marketing campaigns. No study in Brazil has focused on the attention attraction by means of neuromarketing tools, being this also a gap in the international literature which is fulfilled in this research.

Consumer Behavior from the Perspective of Neuromarketing

Human beings can be analyzed from various aspects. Given their biopsychosocial nature, studying humans is rather intricate due to behavioral unpredictability. Such analysis shows impossible in some cases, but at the same time, it is essential to assess such operation to establish good performance metrics of an organization. Thus, it is important to study the unconscious consumer behavior, since a significant portion of their decisions suffers the influence of non-rational aspects. According to this perspective, the science of neuromarketing comes to contribute to this issue.

The field of neuromarketing arises with this purpose, which is to understand such reactions and emotions that are beyond rationality, as well as obtaining answers through brain captures distinguished from information consciously reported by consumers. Additionally, Plassmann, Venkatraman and Yoon (2015) propose five applications of neuromarketing

research: to identify behavior mechanisms that helps validate, refine, or extend existing marketing theories, to measure implicit processes in decision making, dissociating between different psychological processes, to understand individual differences and improving predictions of behavior.

However, the field also recognizes the limitations imposed, since the brain functioning is also complex and unnatural. That is, this field of knowledge, still recent, refers to an application of neuroscience to better understand consumer behavior. Plassmann et al. (2012) state that neuroscience will not replace the methodologies used in Marketing in this day and age, but it provides additional information about consumer choice process and their behavior as a whole. Thus, the purpose of neuromarketing is complementary to the existing and widely used techniques. New technologies for the analysis of the human brain enabled more accurate studies on responses and preferences of consumers (Sutherland, 2007). Such use of technologies for analysis of the human brain has grown considerably, especially through the use of functional magnetic resonance imaging (fMRI).

Subsequently, research papers were carried out using eye-tracking technology, in which studies people's attention regarding commercials, for example, through the gaze trajectory and focus (Sutherland, 2007). The eye-tracking technique is explored by studies intended to analyze how consumers process visual information (Gofman et al., 2009). Thus, this method allows the understanding of consumer behavior concerning the analysis of packaging, promotions, product placement, in addition to enabling the verification of print advertising and television commercials (Fiszman et al., 2013). It was also possible to analyze the effectiveness of digital communication, such as websites, using this technique, to improve user navigation and make it more attractive and interactive (Buscher et al., 2010).

Thus, it is clear that the Eye tracking allows us to evaluate the human visual attention, as it measures this behavior by moving the eyes. Bercea (2013) points out that Eye-tracking has been used in many research fields such as psychology, neuroscience, Engineering, Computer Science and Marketing, specifically advertisements. Concerning print media pieces, some research using that tool include Higgins et al. (2014), Pieters and Wedel (2004), Pieters et al. (2002) and Velasquez and Pasch (2014).

Bercea (2013) shows studies that prove that eye-tracking provides information and more accurate results than the self-report only. Thus, the present study aims to highlight the importance of the celebrity figure as an endorser in the advertisement through the perspective of visual neuroscience and more precisely, through the analysis of visual attention process with the support neuromarketing and the eye-tracking technique.

It was seen that the literature on impacts of celebrity endorsement are more related to attitude formation (such as Goldsmith et al., 2000; Erdogan and Baker, 2000; Sheu, 2010; Stallen et al., 2010; Feliz and Borges, 2014) than to other aspects of consumer behavior, like attention to the ad. Nonetheless, anything that could make the consumer to pay attention to the brand could lead to increased brand awareness, which is one component of brand knowledge. Increased brand knowledge by marketing programs and activities is a fundamental requirement for increasing brand equity (Keller, 2009). Thus, using celebrities as endorsers in advertisements can be a way of attracting more attention from consumers (Engel et al., 1995) towards the product and the brand, in order to build brand equity in the long term.

The two components of visual attention in Eye-tracking studies are fixation movements (measured by the total mean fixation duration, and total mean time for the first fixation) and

saccades (measured by the total mean number of visits).Therefore, the following hypotheses are here proposed:

H1 *The total mean fixation duration on the product is greater in the presence of the celebrity than in the presence of a non-famous person*

H2 *The total mean fixation duration on the brand is greater in the presence of the celebrity than in the presence of a person not famous*

H3 *The total mean fixation duration on the celebrity will be higher than in the non-famous person in their respective ads*

H4 *The total mean number of visits on the product will be higher for ads with celebrity than ads with non-famous persons*

H5 *The total mean number of visits on the brand will be higher for ads with celebrity than ads with non-famous persons*

H6 *The total mean number of visits on the celebrity will be higher than in the non-famous person in their respective ads*

H7 *The total mean time for the first fixation on the celebrity will be lower than in the non-famous person in their respective ads*

H8 *The total mean time for the first fixation on the celebrity will be lower than on the product or brand in the ads with the celebrity*

METHODOLOGY

Due to the application of variable manipulation to evaluate different levels of visual attention, this research features an experimental nature with the use of eye-tracking equipment technique. The experiment was carried out in three educational institutions located in the state of São Paulo in Brazil, a random choice of individuals being made in different shifts: morning, afternoon and evening. Students, staff and teachers had the opportunity to participate. The participants were students of Economics, Business Economics and Controlling, Accounting, Administration and Mathematics Applied to Business, Psychology, and Medicine. The obtained sample comprised 148 participants from 17 to 59 years old, of both genders.

The six brands selected here are endorsed by celebrity Gisele Bundchen. That person was chosen for holding classification features for a celebrity, not only for holding international acknowledgment and fame, but also for being admirable, having empathy, charisma, a trajectory of success and showing a balanced life (Nascimento et al., 2013), as well as having credibility, attractiveness and familiarity (Goldsmith et al., 2000; Sheu, 2010).

In all, 12 print advertising pieces were selected from six selected brands (Pantene, Sky, C & A, Oral-B, Carolina Herrera 212 and Colcci) of different industries that Gisele Bundchen celebrity endorses. Advertisements of those same brands, but without the celebrity, included other non-famous persons. After being picked, the images were digitized. The equipment's software - Studio Professional - was used for selecting areas of interest (AOIs). These areas of interest are the parts of the advertisement in which the equipment collected the data. In the present study, select AOIs are: 1) the celebrity image; 2) the logo, name or symbol representing the brand; 3) the product; 4) other non-famous persons.

The capture of visual attention was performed with Tobii Eye-Tracker X1L equipment with data capture at 30 HZ. For the analysis of the collected data, two softwares were used. First, the eye-tracking image processing system named Studio 3.2 Professional was used; subsequently, the SPSS 17.0 was utilized for the organization and analysis of results (hypothesis testing).

The 148 subjects were divided into two groups. The choice of participants in each cluster was also conducted randomly. The same proportions in the groups were considered. The first groups (74 participants - experimental group1) were exposed to the images of the six brands containing the celebrity. The second group (74 participants - the control group) viewed the pictures of the six brands with other non-famous persons.

Since a comparison was made between the data of the test group and the control group (a within-group design), the experimental model used was the post-test with the control group (Malhotra, 2012). The independent (manipulated) variable of this research refers to the presence of the celebrity in print ads. The absence of the celebrity in the advertisements is the situation of the control group. The dependent variable consists of the visual attention. In technical notation, the experiment can be described by:

GE: *R* X (celebrity presence in the advertising) O_1

GC: *R* O_2

Where

GE=Experimental Group
CG=Control Group
R=Random assignment of subjects
X=Treatment (independent variable)
O=Dependent variable measurement

As it was a within-group experiment, test effects were eliminated in this study. However, the experiment remained sensitive to bias selection and mortality (Malhotra, 2012), which was remedied in part to the random choice of the participating subjects.

For hypothesis testing, parametric and non-parametric tests were conducted with the significance level of 5%, or 0.05, according to the profile of each data to be considered. Tests such as Kolmogorov-Smirnov and Shapiro-Wilk were applied as the normality tests; the null hypothesis (Ho) refers to the normality of the data and the alternative hypothesis (H1) indicates non-normality of the data.

RESULTS

Mann-Whitney-Wilcoxon tests were conducted for hypotheses 1, 2, 4, 5, 6, 7 and 8. As there was an indication of data normality of the referents to hypothesis 3, a parametric t-test for two independent samples was performed. Table 1 shows the descriptive statistics of data for evaluation of Hypothesis 1, having statistically significant differences through the Mann-Whitney-Wilcoxon test.

Table 1
DESCRIPTIVE STATISTICS FOR THE ANALYSIS OF HYPOTHESIS 1

	N	Minimum	Maximum	Mean	Standard Deviation
Fixation duration on product in advertising with celebrities	74	0.74	7.87	4.0216	1.67608
Fixation duration on product in advertising with non-famous persons	74	0.09	6.25	2.6036	1.27790

In comparing the advertisements, those containing the celebrity against those containing non-famous people, the total mean fixation on the product in the ads including celebrities (4.02 s) was higher than in the pieces with non-famous people (2 s, 60 s). Therefore, Hypothesis 1 was confirmed; the total mean fixation duration on the product was higher with the celebrity than with the non-famous person.

Table 2 shows the descriptive statistics of the data to evaluate hypothesis 2. Again, there are significant statistical differences through the Mann-Whitney-Wilcoxon test.

Table 2
DESCRIPTIVE STATISTICS FOR THE ANALYSIS OF HYPOTHESIS 2

	N	Minimum	Maximum	Mean	Standard Deviation
Fixation duration on the brand in advertising with celebrities	74	0.51	13.04	5.6481	2.61658
Fixation duration on the brand in advertising with non-famous persons	74	0.00	10.72	3.4628	1.82623

Table 2 shows that, on the comparison between the groups evaluating advertisements having the celebrity against pieces having non-famous people, the total mean fixation on brand ads with celebrities was higher than ads with non-famous people. Therefore, Hypothesis 2 is confirmed.

Table 3 shows the descriptive statistics of the data to evaluate hypothesis 3, with statistically significant differences through the parametric t-test.

Table 3
DESCRIPTIVE STATISTICS FOR THE ANALYSIS OF HYPOTHESIS 3

	N	Minimum	Maximum	Mean	Standard Deviation
Fixation duration on the celebrity in advertising with celebrities	74	3.66	22.69	11.9639	3.36433
Fixation duration on the non-famous persons in	74	0.78	14.75	8.8782	2.46413

advertising with non-famous persons					

Table 3 shows that the total mean fixation on the celebrity in their ads (22.69 s) was higher than the total mean fixation on non-famous persons (14.75 s). Thus, Hypothesis 3 was confirmed; the average total fixation on the celebrity is greater than on non-famous persons in their respective ads.

Table 4 shows the descriptive statistics of the data for evaluation Hypothesis 4, having statistically significant differences through the Mann-Whitney-Wilcoxon test.

Table 4
DESCRIPTIVE STATISTICS FOR THE ANALYSIS OF HYPOTHESIS 4

	N	Minimum	Maximum	Mean	Standard Deviation
Number of visits on the product in advertising with celebrities	74	2.00	14.00	7.8919	2.78729
Number of visits on the product in advertising with non-famous persons	74	1.00	9.00	5.1757	1.69090

Table 4 shows that when comparing the groups evaluating ads with the celebrity or non-famous persons, the total mean number of visits on the product in ads with celebrities was higher than in ads with non-famous persons, thus confirming hypothesis 4.

Table 5 presents the descriptive statistics of the data to evaluate hypothesis 5. Again, there are statistically significant differences through the Wilcoxon-Mann-Whitney test.

Table 5
DESCRIPTIVE STATISTICS FOR THE ANALYSIS OF HYPOTHESIS 5

	N	Minimum	Maximum	Mean	Standard Deviation
Number of visits on the brand in advertising with celebrities	74	1.00	18.00	10.1216	3.75245
Number of visits on the brand in advertising with non-famous persons	74	0.00	14.00	6.1216	2.65842

It is noted that the total mean number of visits (10.12 views) on the brand in ads with celebrities was higher than in ads with non-famous persons (6.12 visits). That is, Hypothesis 5 was confirmed.

Table 6 shows the descriptive statistics of data for evaluation Hypothesis 6, with statistically significant differences through the Mann-Whitney-Wilcoxon test.

Table 6
DESCRIPTIVE STATISTICS FOR THE ANALYSIS OF HYPOTHESIS 6

	N	Minimum	Maximum	Mean	Standard Deviation
Number of visits on the	74	7.00	24.00	14.6892	4.24240

celebrity in advertising with celebrities					
Number of visits on non-famous persons in advertising with non-famous persons	74	3.00	18.00	9.4730	2.76585

The data in Table 6 imply that the total mean number of visits on the celebrity in their ads was higher than in the ads with non-famous persons. By the analysis of descriptive statistics, it can be observed that there were significant differences, i.e., the total mean number of visits on the celebrity (14.68 hits) was higher than the total mean number of visits in the non-famous persons (9.47 visits). Therefore, Hypothesis 6 was confirmed.

Table 7 shows the descriptive statistical data to evaluate hypothesis 7. In this case, there are no statistically significant differences using the Mann-Whitney-Wilcoxon test. The total mean time for the first fixation on the celebrity and non-famous persons displays a significant proximity (0.5289 s 0.4338 s, respectively). Both times show how quickly participants primarily saw both the celebrity and the non-famous people. Thus, the descriptive statistical analysis shows no significant differences between the two groups. Thus, Hypothesis 7 was not confirmed ("The total mean time for the first fixation on the celebrity will be lower than in the non-famous person in their respective ads"), although small times (speed) were observed in both groups considered in this hypothesis.

Table 7
DESCRIPTIVE STATISTICS FOR THE ANALYSIS OF HYPOTHESIS 7

	N	Minimum	Maximum	Mean	Standard Deviation
Time for the first fixation on the celebrity	74	0.00	5.02	0.5289	1.02697
Time for the first fixation on the non-famous person	74	0.00	5.26	0.4338	0.92735

Finally, Table 8 presents the descriptive statistics of the data for evaluation of the research's final hypothesis. As to Hypothesis 8, "The total mean time for the first fixation on the celebrity will be lower than on the product or brand in the ads with the celebrity," with statistically significant differences using the Mann-Whitney-Wilcoxon test.

Table 8
DESCRIPTIVE STATISTICS FOR THE ANALYSIS OF HYPOTHESIS 8

	N	Minimum	Maximum	Mean	Standard Deviation
Time for the first fixation on the celebrity in advertising with the celebrity	74	0.00	5.02	0.5289	1.02697
Time for the first fixation on the brand in advertising with the celebrity	74	0.28	26.78	2.7074	3.78221

Time for the first fixation on the product in advertising with the celebrity	74	0.00	15.26	3.1436	3.18798

Table 8 shows that the times described were different. The total mean time for the first fixation on the celebrity (0.5289 s) was lower than on the brand (2.7074 s) and on the product (3.1436) in ads with the celebrity. Thus, it was possible to support Hypothesis 8. In other words, participants who saw the ads with the celebrity responded first, faster, to this celebrity in comparison the product and the brand.

DISCUSSION AND FINAL CONSIDERATIONS

The results of this experimental study show that there was an established pattern of responses from participants. By analyzing the variables including the total mean fixation duration and the total mean number of visits both for the brand and for the product, it is observed that the ads with celebrity outperform the ads with non-famous persons. That is, people paid more attention to brands and products endorsed by the celebrity than to the ads with non-famous persons, which corroborates the literature on the subject and adds information to fill the gap about studies on celebrity endorsement outside the USA (Tzoumaka et al., 2016). The confirmation of the vast majority of the research hypothesis indicates a similar result (although using another methodology) to the works of Dal Bó et al. (2012), Goldsmith et al. (2000), Muda et al. (2014), Stallen et al. (2010) and Felix and Borges (2014), which, somehow, have shown that the celebrity influences the purchase process and the attentional process of consumers. It is noteworthy; however, that "attention" is not described as "visual attention" in most of these studies, and has not been demonstrated by the eye tracking method in an experimental research, which is a contribution of this study.

Thus, the results show that ads with celebrity, compared to those who use non-famous persons, are more evident to participants concerning the variables "fixation duration" and "number of visits" (evidenced by hypotheses 3 and 6). However, given the variable "time for the first fixation" participants took less time to observe, or merely glanced at the non-famous individuals than to watch the celebrity (verified in hypothesis 7).

This hypothesis was raised because, in addition to seeking to reinforce the idea of celebrity influence in advertising, it was also attempted to determine whether such a personality would be substantial simply for being a person, not only for the effect of being a celebrity. The results showed that it is not just because the person is a celebrity that participants would look at them faster. The results showed just the opposite: in this case, non-famous persons attracted more attention in the first place, which is an original result in the literature of celebrity endorsement. The practical implications of this result refer to providing information to brand managers, especially in the luxury industry, to help decide to whether using or not celebrities is a branding strategy.

However, by analysing, in isolation, the ads bringing the celebrity, it is clear that the participants took less time (and thus glanced faster) at the celebrity than at products and brands they endorsed (as demonstrated in hypothesis 8).This fact proves that the celebrity attracts more attention to themselves in comparison to other stimuli present in advertisements. The lesser the time elapse before the user first fixated on an area of interest occurs, the greater the capacity of the graphic area properties will be to attract visual attention. In other words, the celebrity has attracted the increased attention (compared to products and brands they endorsed) as proposed by

the work Dal Bó et al. (2012), Goldsmith et al. (2000), Muda et al. (2014) and Stallen et al. (2010).

Overall, the results demonstrated that, in some way, participants paid attention to the celebrity considered in the study. When celebrities were compared to non-famous persons, in most cases, it was evident the importance of the presence of the famous person in the ads. However, the fact that the celebrity diverts attention from the brand and the products shown in the ads is a major issue to be considered by marketing managers. This result can be especially troubling for new brands in the market that need more exposure time to create awareness and mind share in the target audience.

Another contribution of this work is that the results add information on the existence and size of the celebrity endorsement effect on visual attention, by means of a novel technique (eye-tracking) and a different country from those used in previous research (Brazil). The results help to confirm previous findings using different contexts.

Regarding the limitations of this research, it has to be considered that the link between visual attention and positive attitude may depend on other variables that were not measured in this study. Although previous studies (Felix and Borges, 2014) identified that attention did have a positive and significant effect on attitudes toward the ad, it is important that other studies consider the mediating effect of ad liking. Moreover, another limitation refers to the use of a non-probabilistic convenience sample. As pointed out by Malhotra (2012), non-probability samples can provide good estimates of the characteristics of the population, but do not have inferential purposes, and thus there would be a restriction on the generalization of the sampling results. In this way, it can be stated that the results refer only to the 148 participants in this study. Additionally, there was no total sample composition homogeneity. Despite considering participants aged from 17 to 59 years old, of both genders, and in different income brackets, there was a predominance of men (although the difference is not significant), young people (17-25 years), and with a household income of more ten minimum national wages. Nonetheless, it is worth mentioning that the limitations comprising sample size and representativeness are due to the time consuming and cost-intensive research procedures when using eye-tracking methodology (Felix and Borges, 2014).

It would be important to conduct further research considering the limitations of this study. As to improve the sampling process, data collection could be made in places of a large movement of people (potential consumers) such as shopping centers. Regarding the use of the eye-tracking technique, other elements could be considered for the attention analysis such as videos instead of images. Although videos consist of stimuli that are harder to control than images, media is dynamic; therefore corresponding in a more reliable fashion to what consumers visualize on a daily basis (Bercea, 2013). Also, other celebrities and other advertising formats could be considered. Finally, other neuromarketing techniques could be used for the study of celebrity endorsements, including Pitron Emission Tomography (PET), Magnetoencephalography (MEG) and electroencephalography (EEG) Galvanic Skin Response (GSR), and pupil dilation analysis.

ACKNOWLEDGEMENT

This research was supported by the Sao Paulo Research Foundation (FAPESP, Brazil) under grant number 2014/22576-4.

REFERENCES

Ajzen, I. (2001). Nature and operation of attitudes. *Annual Review of Psychology, 52*, 27-58.

Bae, M. (2016). Effects of various types of cause-related marketing (CRM) ad appeals on consumers' visual attention, perceptions and purchase intentions. *Journal of Promotion Management*, in press.

Bercea, M.D. (2013). Quantitative versus qualitative in neuromarketing research. *Munich Personal RePEc Archive*, 44134, 1-12.

Boeing, R. & Schurhaus, C. (2014). The effect of celebrity endorsement on Brazilian consumer behavior: Does it really matter? *International Business Research*, *7*(5), 49.

Buscher, G., Dumais S.T. & Cutrell, E. (2010). The good, the bad and the random: An eye-tracking study of ad quality in web search. In *proceedings of the international ACM SIGIR conference on Research and development in information retrieval in Geneva, Switzerland*, 42-49.

Carneiro M.A (2002). *A Utilização de Celebridades e o Múltiplo Endosso na Propaganda*. dissertação de mestrado não publicada, Pontifícia Universidade Católica do Rio de Janeiro, Rio de Janeiro.

Dal Bó, G., Milan G.S. & De Toni, D. (2012). O endosso por celebridade e a gestão da imagem da marca: evidências empíricas a partir do estudo da marca Ipanema Gisele Bundchen. *REAd. Revista Eletrônica de Administração (Porto Alegre)*, *18*(3), 681-717.

Engel J.F., Blackwell, R.D. & Miniard, P.W (1995). *Consumer Behavior*, The Dryden Press, Fort Worth, TX.

Erdogan, B.Z. & Baker, M.J (2000). Towards a practitioner-based model of selecting celebrity endorsers. *International Journal of Advertising, 19*(1), 25-42.

Felix, R. & Borges, A. (2014). Celebrity endorser attractiveness, visual attention and implications for ad attitudes and brand evaluations: A replication and extension. *Journal of Brand Management, 21*(7-8), 579-593.

Fiszman, B.P., Velasco, C., Salgado-Montejo, A. & Spence, C. (2013). Using combined eye tracking and word association in order to assess novel packaging solutions: A case study involving jam jars. *Food Quality and Preference, 28*, 328-338.

Freire, O.B.L. & Senise, D. (2011). Percepção de celebridades do esporte: um modelo de escolha, gestão e controle do seu uso em relação às marcas. *Revista Organicom, 8*(15), 218-232.

Gofman, A., Moskowitz, H.R., Fyrbjork, J., Moskowitz, D. & Mets, T. (2009). Extending rule developing experimentation to perception of food packages with eye tracking. *The Open Food Science Journal, 3*, 66-78.

Goldsmith, R.E., Lafferty, B.A. & Newell, S.J. (2000). The impact of corporate credibility and celebrity credibility on consumer reaction to advertisements and brands. *Journal of Advertising, 29*(3), 43-54.

Higgins, E., Leinenger, M. & Rayner, K. (2014). Eye movements when viewing advertisements. *Frontiers in Psychology, 5*, 210.

Iddiols, D. (2002). The fame game: Using celebrities effectively. *Admap, 434*, 27-29.

Keller, K.L (1993). Conceptualizing, measuring and managing customer-based brand equity. *Journal of Marketing, 57*(1), 1-22.

Keller, K.L (2001). *Building Customer-Based Brand Equity: A Blueprint for Creating Strong Brands*, Marketing Science Institute, Cambridge, MA.

Keller, K.L. (2009). Building strong brands in a modern marketing communications environment. *Journal of Marketing Communications*, *15*(2-3), 139-155.

Kotler, P. & Keller, K.L (2009), *Marketing Management* (13th ed.), Pearson Prentice Hall, Upper Saddle River, NJ.

Malhotra, N.K. (1996). *Marketing Research: An Applied Orientation*, Prentice Hall, Upper Saddle River, NJ.

Matos, C.A. & Veiga, R.T. (2002). A influência do conteúdo e da frequência de notícias a empresas nas atitudes dos consumidores. In *Anais do Encontro da ANPAD*, Salvador, Brasil, 24-25. September, Retrieved from: http://www.anpad.org.br/diversos/trabalhos/EnANPAD/enanpad_2002/MKT/2002_MKT1845.pdf

Mowen, J.C. & Minor, M.S. (1997), *Consumer Behavior*, Prentice Hall, New York, NY.

Muda, M., Musa R., Mohamed, R.N. & Borhan, H. (2014). Celebrity entrepreneur endorsement and advertising effectiveness. *Procedia - Social and Behavioral Sciences*, *130*, 11-20.

Nascimento, A.C., Perez, C., Oliveira, D.A. & Bronsztein, K.P. (2013). Celebridades, marcas e consumo: quais atributos dos famosos fortalecem um produto no mercado? *Signos do Consumo, 5*(1), 70-87.

Ohanian, R. (1990). Construction and validation of a scale to measure celebrity endorsers perceived expertise, trustworthiness and attractiveness. *Journal of Advertising*, *19*(3), 39-52.

Patel, P. (2009). Impact of celebrity endorsement on brand acceptance. *The Icfai University Journal of Consumer Behavior*, *4*(1), 36-45.

Pieters, R. & Wedel, M. (2004). Attention capture and transfer in advertising: Brand, pictorial and text-size effects. *Journal of Marketing*, *68*(2), 36-50.

Pieters, R., Warlop L. & Wedel, M. (2002). Breaking through the clutter: Benefits of advertisement originality and familiarity for brand attention and memory. *Management Science*, *48*(6), 765-781.

Plassmann, H., Ramsoy, T.Z. & Milosavljevic, M. (2012). Branding the brain: A critical review and outlook. *Journal of Consumer Psychology*, *22*(1), 18-36.

Plassmann, H. & Weber, B. (2015). Individual differences in marketing placebo effects: Evidence from brain imaging and behavioral experiments. *American Marketing Association*, *52*(4), 493-510.

Pringle, H. & Binet, L. (2005). How marketers can use celebrities to sell more effectively. *Journal of Consumer Behavior*, *4*(3), 201-214.

Santana, A.F.R & Pérez-Nebra, A.R (2008). Será que imagem é mesmo tudo? Descrição de variáveis que impactam a retenção da propaganda na memória. *Comunicação e Inovação*, *9*(17), 13-24.

Sheu, J.B. (2010). A hybrid dynamics forecast model for analyzing celebrity endorsement effects on consumer attitudes. *Mathematical and Computer Modelling*, *52*(9-10), 1554-1569.

Shimp, T. (2008). *Advertising Promotion and Other Aspects of Integrated Marketing Communications*. Cengage Learning, New York, NY.

Silva, L.A., Lopes, E.L., Freire, O.B.L. & Silva, D. (2012). O efeito da marca na avaliação de propagandas endossadas por celebridades: um estudo experimental. In *anais do Encontro da ANPAD*, Rio de Janeiro, Brasil, 22-26 September, Retrieved from: http://www.anpad.org.br/admin/pdf/2012_MKT1000.pdf

Stallen, M., Smidts, A., Rijpkema, M., Smit, G., Klucharev, V. & Fernandez, G. (2010). Celebrities and shoes on the female brain: The neural correlates of product evaluation in the context of fame. *Journal of Economic Psychology*, *31*(5), 802-811.

Stanton, S.J., Sinnott-Armstrong, W. & Huettel, S.A. (2016). Neuromarketing: Ethical Implications of its use and potential misuse. *Journal of Business Ethics*, 1-13. doi:10.1007/s10551-016-3059-0

Sutherland, M. (2007). Neuromarketing: What´s it all about? In *Australian Neuromarketing Symposium at Swinburne University in Melbourne, Australia*.

Tzoumaka, E., Tsiotsou, R.H., & Siomkos, G. (2016). Delineating the role of endorser's perceived qualities and consumer characteristics on celebrity endorsement effectiveness. *Journal of Marketing Communications*, *22*(3), 307-326.

Velasquez, C.E & Pasch, K.E. (2014). Attention to food and beverage advertisements as measured by eye-tracking technology and the food preferences and choices of youth. *Journal of the Academy of Nutrition and Dietetics, 114*(4), 578-582.

Wedel, M. & Pieters, R. (2000). Eye fixations on advertisements and memory for brands: A model and findings. *Marketing Science*, *19*(4), 297-312.