

# A Non-Intrusive Experiment to Examine the Visual Attention Data on Exposure to a Brand Using Eye Tracking

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**Abstract:** The objective of this study is to understand the influence of articulation on sports sponsorship posters of a sporting event. An eye tracking experiment was conducted to examine the visual attention data on exposure to the sponsor's brand while viewing an advertisement poster. The respondents were asked to fill out a questionnaire based on what they could recall while viewing the poster. Quantitative data, along with the eye tracking data, was analyzed using the Mann-Whitney U test and ANOVA. Respondents between the age group of 20 to 42 years were approached using the convenience sampling method. The findings of the study ascertained that articulating an advertisement sports poster is unlikely to have a substantial impact on visual attention and brand awareness of the consumer, instead diverting the attention away from the brand to the articulated text. Furthermore, the articulation effects of sports posters depend on the degree of congruence between sponsor-event pairing, which influences visual attention, resulting in a stronger brand recall when congruence is low. This study adds to the body of knowledge on the impact of articulation in sports sponsorship, where the extant literature is still limited. Future research could consider other types of articulation, such as analogical and socio-financial, and use other techniques, such as Electroencephalogram (EEG) and Functional Magnetic Resonance (fMRI), to arrive at better results. This study aimed to empirically test the effect of articulation on sports posters considering the impact of ad-design elements on attention and media planning.

**Keywords:** Sports Sponsorship, Eye Tracking, Articulation, Visual Attention, Brand Awareness

## Introduction

Advertisement is a significant means of communication tool in marketing, with companies projected to spend globally US\$780.8 billion in 2022 (Statista, 2022). Sponsorship is one of the most commonly used and most relevant advertising strategies (Maxwell and Lough, 2009), with global sponsorship spending of US\$92.7 billion in 2021 (IEG, 2021). Approximately 70% of the investment is dedicated to sponsorships in the sports industry, with total spending reaching over US\$ 64.8 billion globally in 2021 (Statista, 2021). The global sports sponsorship market is predicted to reach US\$ 89.60 billion in 2027, growing at a CAGR of 6.72% (Statista, 2021). With such huge investments made by businesses in sponsorships, the resultant incremental sales growth cannot be accurately assessed

(Meenaghan and O'Sullivan, 2013). Previous research papers have studied the impact of sponsorship on customer attitudes by measuring buying intention (Biscaia *et al.*, 2013), sponsor perception (Dos Santos *et al.*, 2019a), and recall (McDonald and Karg, 2015). Nonetheless, visual attention as a fundamental precondition (Breuer and Rumpf, 2012) for the study of sponsorship effect in the context of viewing a poster has hardly been explored. Given its non-conventional, 'below the line' mode of communication, sponsorship addresses the challenges of today's consumer viewing in an overloaded information environment (DeGaris *et al.*, 2017).

Researchers recognize that the effectiveness of the sponsorship is characterized by viewers' responses which are shaped by the visual attention to the brand (Bal *et al.*, 2010). Sponsorship thus intends to capture visual attention to create the brand image in the consumers'

minds (Wedel and Pieters, 2000). Sponsorship advertisements impact consumers' visual attention (Muñoz-Leiva *et al.*, 2021), which contributes to the mental processing of brand information (Breuer and Rumpf, 2012). A study on event sponsorship by Boronczyk and Breuer (2020) suggested that viewers' attention is a significant indicator in determining the effectiveness of an advertisement. The key element in such endorsements is the brand and the longer the audience gazes at the name or logo of the brand, the greater the impact of sponsor event pairing (Olson and Thjømmøe, 2012). Therefore, consumers' attention is a necessary requirement for effective communication in developing a strong link and awareness with the brand (Simmonds *et al.*, 2020).

Companies adopt various advertisement techniques, such as sponsorship, to target their customers as part of their business strategy (Koronios *et al.*, 2021). The objectives that drive organizations to invest in sponsorship are generating brand awareness and developing associations with the consumer, which leads to an increase in sales (Meenaghan, 2013; Naess, 2020). Brands seek sports sponsorship associations as they aid in nullifying the effects of competition by rising above the clutter, with the purpose of being remembered and recalled better while making a purchase decision (Jensen and Cornwell, 2021). Thus, the concept of congruency in the pairing of event and sponsor plays a significant role as it may impact consumer perceptions and buying intention (Koo and Lee, 2018). Congruent sponsorships are those associations where the brand naturally matches and aligns with the event on numerous aspects, features, and characteristics (Simmons and Becker-Olsen, 2006). Congruent sponsorships are more likely to increase the image transmission from the sporting event to sponsor and promote brand likeness and trust (Carrillat *et al.*, 2015). It is in the best interest of the brand to promote the concept of congruence in event sponsorships to communicate the sponsor message more effectively (Madrigal and King, 2021).

There are several instances when a sponsor does not have a rational and logical alignment with the sporting event but wishes to associate in sponsorships. It is necessary for the sponsor in such cases to explain or articulate to viewers the rationale behind the connection of its brand with the event so as to foster the formation of meaning in the mind of the consumers (Cornwell *et al.*, 2006). Articulation is a constructive method to create a link between the sponsor and an event where there is a lack of congruence between the two entities. When there is a low degree of congruence, the articulation of sponsorship creates a perceived association among the consumers, which leads to strengthening the impact of sponsorship (Pontes *et al.*, 2020). Articulating the text in a sponsorship advertisement communication improves

the brand attitude (Westberg and Pope, 2014), perceived congruence (King and Madrigal, 2018), and brand recall (DeGaris *et al.*, 2017) of the sponsor.

This study studies the effectiveness of articulation in sporting event sponsorship, especially with reference to the print media (posters). The significance of posters as a medium has been emphasized in prior academic literature as a fundamental way of communicating information, specifically with regard to small and medium sporting events (Taks *et al.*, 2015). The sporting event posters distinctly emerge for their affordable cost, visibility, critical positioning, and related audience feedback (Thomson *et al.*, 2019) and can be customized to fit different setups. However, analysis of visual attention to sponsorship posters has not been very extensively studied in assessing the influence of sponsorship on consumer attitudes. Sponsors' communications must attract viewers' attention in order to process sponsor information that leads to subsequent outcomes like brand recognition (Breuer and Rumpf, 2012). Against this backdrop, the objective of this study is to study the impact of articulation on visual attention, congruence, and recall of the brands in the communication medium of sporting events posters. Additionally, this study aims to evaluate the measure of the attention brands achieve due to articulation depending on their degree of congruence with the event. This study further extends our knowledge of sponsorship effectiveness by investigating the possible underlying mechanisms affecting viewers' reactions to sponsor messages. This research study probes into the following research questions:

- RQ1: Does a sporting event poster with articulation improves visual attention and congruence compared to a non-articulated sports poster?
- RQ2: Whether articulation influences congruence, visual attention, and brand awareness in the medium of sporting event posters?
- RQ3: Evaluate if articulation has a significant impact on brand attention due to the effects of congruence

For the study, a controlled laboratory eye-tracking experiment was conducted to obtain viewer responses. Neurophysiological tools were employed to assess the impact of congruence and how it affected the viewer's visual attention. Furthermore, a Questionnaire survey was administered after the eye-tracking experiment to examine the effect of articulation on the brand awareness of the sponsor.

The remaining paper is structured in the following manner. A review of literature and research hypotheses is presented first, followed by the methodology undertaken for the research. Next, the results and findings of the study are summarized. The subsequent section discusses theoretical contribution and practical

implications and finally, the set of limitations and directions for future research are proposed.

Organizations pursue brand-related value through associations, which leads to event sponsorship programs worldwide (Morgan *et al.*, 2020). This association occurs when a consumer transfers information about the sponsored event's characteristics, advantages, and attitudes to a brand (Dees *et al.*, 2008). Any type of processing of sponsor information requires viewers' visual attention to be attracted by sponsor messages which influence brand recall (Breuer and Rumpf, 2012). Herold *et al.* (2021) suggest that attention is a precondition for the image transfer and recognition of sponsorship. There exists a significant connection between the number of eye fixations in a sports poster (Maughan *et al.*, 2007) and memory. Thus, there is a positive correlation between the amount of visual attention and recall (Wedel and Pieters, 2000).

Studies have investigated that the effectiveness of sponsorship is influenced by the varying level of congruence in an event and sponsor pairing, which significantly impacts the transfer of sponsorship images (Madriral and King, 2021). Congruence theory says that congruent messages are communicated and recalled better than incongruent or irrelevant ones (Jeong and King, 2010). However, there are few kinds of literature that suggest that incongruent messages are recalled more easily (Dos Santos and Moreno, 2018). For these reasons, the role of congruence in the association of brand and event (Shin *et al.*, 2018) is considered one of the most significant factors that influence the effects of sponsorship of sporting events (Dos Santos and Moreno, 2018). Although congruent pairings of sponsors-events have a natural advantage for brand recall, consumers' recognition can be improved through articulation for incongruent associations (Cornwell *et al.*, 2006). Articulation attracts the viewer's attention to the sponsor by creating an association with the sports event and enhances the fit perception of the sponsorship (Coppetti *et al.*, 2009). Prior research has shown that articulation improves the audience's awareness of the sponsor (Cornwell *et al.*, 2006) and induces strong attitudes toward the brand (Weeks *et al.*, 2008). However, these researchers have considered the effect of implementing the articulation and thus, it is necessary to examine the various effects of different types of articulation (or zero articulation) and factors influencing its effectiveness.

The above findings may be influenced by diverse factors of the audience that can impact the articulation effectiveness, as the fit perception between the sponsor and event is created through mental processing in the context of articulation. To determine the impact of sponsorship and to draw significant implications for such endorsements, this research investigates whether articulation improves sponsorship effects. Especially the study investigates the impact of articulation (or no

articulation) on sponsorship and examines the amount of articulation that affects the sponsorship outcomes depending on the varying level of congruence.

### *Sponsor Image*

Sponsor images are the beliefs and values identified with a specific company held by a particular section of the population (Ko *et al.*, 2008). Customers undergo cognitive processing to build their own identification of sponsors than just recognizing the brand (Jensen *et al.*, 2015). Consumers distinguish brands with prominent images more frequently than the brands having a less noticeable image, as these sponsors are more easily remembered in the minds of buyers showing a significant image transmission of the brand entity (Pappu *et al.*, 2007).

### *Congruency*

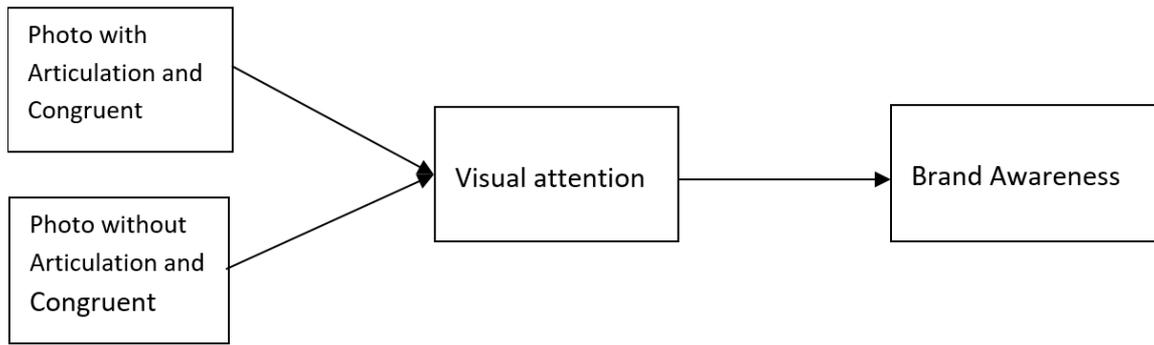
Congruency in sports sponsorship is perceived as a semantic link between an event and the sponsor brand, making it easy for consumers to comprehend the association (Devlin and Billings, 2018). Image-related linkages communicate the brands' and events' reputational values, whereas utilitarian congruent brands emphasize the brands' value to the event. Sponsors promote consistent activities with the brand to enhance vantage points (Simmons and Becker-Olsen, 2006) and purchase objectives (Zhu *et al.*, 2018).

### *Brand Awareness*

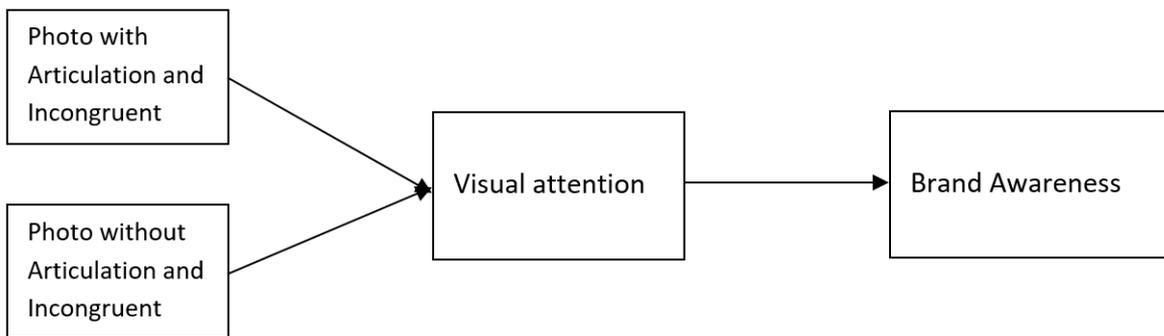
Brand awareness is the degree of the strength of the brand node in memory that determines a customer's urge and potential to recognize the brand under various situations (Keller *et al.*, 2011). Brand awareness improves when consumer notices, pay attention to the brand, and is ready to be associated with the products of that company (Stahl *et al.*, 2012). Cornwell *et al.* (2006) suggest that a high degree of perceived congruency based on the associations or fit between the sponsor and the sporting discipline can have a significant impact on brand awareness.

### *Articulation*

Articulation is a term defined as the process of describing the link between two entities to form some relative explanation in the minds of consumers (Cornwell *et al.*, 2006). Articulation is an important strategy in circumstances where there is a lack of natural alignment between a sporting discipline and the sponsor brand. When there is no natural fit between sporting events and sponsors, articulating the matter can help build a fit so that viewers can identify the association and the manufactured fit can help reinforce the sponsorship's impact (Olson and Thjomoe, 2011). Sponsorship articulation is a brand's purposeful endeavor to describe the association between a sponsoring brand and a sporting event to establish a mental fitting between the two entities (Cornwell *et al.*, 2006).



**Fig. 1:** Theoretical model assessing the impact of articulation in congruent pairing on visual attention and brand awareness; Note: Stimuli images are used to compare the effect of articulation (vs. non-articulation) on visual attention and brand awareness with both the images showing congruence pairing of sponsored event and sponsoring brand



**Fig. 2:** Theoretical model assessing the impact of articulation in incongruent pairing on visual attention and brand; Note: Awareness stimuli images are used to compare the effect of articulation (vs. non-articulation) on visual attention and brand awareness with both the images showing incongruence pairing of sponsored event and sponsoring brand

### Hypotheses Development

According to previous studies, the articulation of sponsorship posters can help consumers learn more about the brand (Cornwell *et al.*, 2006), improve the appraisal of sponsors (Coppetti *et al.*, 2009) and promote positive sentiments toward sponsors (Weeks *et al.*, 2008). Olson and Thjømøe (2011) suggest that articulation may have a favorable or unfavorable impact on the overall association. Various factors of influence may help to lessen these negative consequences. Commercially articulated communications create a greater awareness of sponsor-event congruence than non-articulated commercial communications. Thus, the following hypothesis is proposed (Fig. 1).

H<sub>1</sub>: There is a significant impact of articulation in sports posters on the congruence between sponsoring the brand and sponsored event

Visual attention is a neuro-physiological activity of synthesizing information based on the allocation of a person's cognitive capacities to stimuli in their visual area (Geraldo *et al.*, 2019). Attention is defined based on the subject's preferences and constraints (Hsieh *et al.*, 2012).

Information is processed faster or more effectively when focusing on attention (Bucher and Voss, 2019). The primary goal of sports sponsorship is to promote the brand and the more time the consumer spends visualizing the sponsor's brand, the more effective the sponsorship will be (Olson and Thjømøe, 2012). The message will be ineffective if the subject is unaware of the sponsor. Successful communication requires the consumer to pay attention to the brand (Rumpf and Breuer, 2014), and articulation as a supportive component will help draw attention to the sponsor's brand. Thus, proposed the following hypothesis (Fig. 2).

H<sub>2</sub>: The articulation of sponsorships advertisement posters has a significant impact on visual attention

Congruent sponsorships are more easily remembered and recalled than incongruent sponsorships (Shin *et al.*, 2018), as there is a favorable association between visual attention and brand awareness (Muñoz-Leiva *et al.*, 2019). Some researches show that incongruent sponsors do not gain more brand attention than congruent ones (Alonso-Dos-Santos *et al.*, 2016). Articulation as a bottom-up component is thought to potentially change the

visual attention of a brand based on its congruence. Therefore, the following hypothesis is proposed.

H<sub>3</sub>: There is a significant difference in visual attention influenced due to the effect of congruence, but only when the poster is articulated

Brand awareness or recall is the recognition of sponsoring brand, which is commonly used as a dependent variable for examining the sponsorship efficacy (Maricic *et al.*, 2018). Cornwell *et al.* (2006) showed that articulation has a significant impact on memory while recalling the sponsored brand in the case of incongruent sponsorships but is not significant in the case of congruent associations. If articulating the text in sports sponsorship communication media helps improve the fit perception in the sponsor event pairing (Simmons and Becker-Olsen, 2006) and that congruency helps improve brand awareness (Zhu *et al.*, 2018), then it could be proposed that articulation has a significant effect on brand awareness. Thus, the next hypothesis follows.

H<sub>4</sub>: Articulated sports sponsorship advertisement posters have a significant impact on the brand awareness of the sponsor

## Materials and Methods

The methodology of the study is given in Fig. 3 describing the various steps undertaken to conduct the research.

### Image Design

For the image design to be used as stimuli in the experiment, three sporting events were selected by convenience: Basketball, lawn tennis, and motor racing. These sports were chosen for two reasons: These posters were readily available online and these posters are commonly used to communicate sporting events in these sports. Then for each sporting discipline, 70 university students were asked to name a few congruent and incongruent sponsoring brands. Thus, six brands of congruent associations and incongruent associations for each of the three sporting disciplines were generated. According to a research study by Alonso-Dos-Santos *et al.* (2016), the principles linked with sporting event sponsors' logos should be consistent with the events' values; the sponsors' image should be comparable to the events' image. Additionally, 40 university students were asked to rank the degree of congruency of the most regularly formed associations of those sporting events with the brands from the last exercise on a 5-pointer Likert scale to further narrow down and validate the stimuli. The

correlations between higher levels of coherence and incoherence were found and the communication stimuli were created based on their higher degree of association, thus establishing the congruence variable. The final stimuli, as prototype posters, were produced based on the analysis of the communication images that garnered positive feedback. There were no representations of real players or sports teams on these posters, which could have influenced the subjects' willingness to participate in the study.

### Apparatus

The eye tracking tool was the basis of the experiment because eye movements (Holmqvist *et al.*, 2011) are the best markers of visual attention. This study used the Tobii studio eye tracking system (ver. 3.4.6.1320) of a sampling rate of 60 Hz as the basis of an experiment for conducting the tests and for data collection. The eye tracker is a hardware device clamped (Cornwell *et al.*, 2006) to the laptop screen and connected through a USB cable. The device has an eye tracking camera to detect the motion of participants' eyes while watching the stimuli images and the fixation data was automatically captured by Tobii eye tracker software. Output is recorded in visual data such as gaze plots, heat maps, and cluster images. Areas of Interest (AoI) were assigned to the predefined region (s) in the image in which the visual data was captured. Fixation count (number of times the viewer's eyes paused on target stimuli), fixation duration (amount of time a viewer spends on a single fixation or staring at stimuli), the position of the first fixation, and time for the first fixation were some of the measurements that the eye tracker system captures (Lee and Ahn, 2012). The current study is primarily concerned with visual attention, so fixation duration and fixation count were selected as suitable metrics (Wedel and Pieters, 2008). The collected data was analyzed using SPSS version 25.

### Experiment Design

This design of the study was based upon a Latin square  $2 \times 2 \times 3$  mixed designs comprising the factors of articulation, factors of congruence, and three sporting disciplines (basketball, lawn tennis, and motor racing). The articulation message was introduced as text that stated the value of xxx (brand) aligned with the nature of sport through this sponsorship, mentioned at the bottom of the advertisement posters. The experiment comprised 12 posters grouped into four types of combinations assigned as experimental groups: G1, G2, G3, and G4, depending upon various factors: Articulation or non-articulation, congruence or incongruence and three sporting disciplines (details in

Table 1). Areas of Interest (AoI) were assigned to the sponsorship advertisement posters' brand logo to generate visual data such as gaze plots and heat maps.

### *Participants*

Lab work for the study was conducted in the consumer behavioral studies lab of an Indian University situated in a metro city named Pune, in the Maharashtra state of India. The convenience sampling technique was employed to collect data for the study on university students for a period of three months, from October to December 2021. The respondents' sample consisted of 44 participants, who were postgraduate students undertaking MBA curricula, 55 were male and 45% were female. They were entirely unrelated and unknown to the research study or the persons in charge of it. The age of the respondents was between 20 to 42 years, with a mean age of 25.3 years (SD = 4.4). The assigned sports experiment attracted the interest of all respondents, who showed moderate to high enthusiasm. A small gift or token in the form of chocolate was given to all the participants after the experiment as a gesture of thanksgiving.

### *Procedure*

The experiment was conducted in an air-conditioned behavioral lab using the Tobii eye tracking tool. The respondents were briefed about the experiment and it started with their consent. The experiment began with the respondent providing their socio-demographic details and then a calibration procedure was performed for the eye tracking tool on each respondent using 5-points calibrations to map eye position to screen coordinates. If any respondent failed the calibration section as the eye tracking tool would suggest, then the respondents' data would not be captured. After successful calibration is done, then the respondents were assigned at random to one of the experimental groups on a first-come, first-serve basis. Therefore, the first respondent undergoes experimental group G1, which showed a basketball poster, then a lawn tennis poster, and finally a motor racing poster, all of them articulated and congruent. Similarly, the next respondent undergoes the experimental group G2, which was articulated but incongruent, the next one undergoes G3, which was non-articulated but congruent and the subsequent subject undergoes G4, which was non-articulated and incongruent, respectively and that sequence continues. The stimuli of three-sport posters were displayed for 10 sec each (Dos Santos *et al.*, 2019b) with a black image being displayed for two seconds (Gülçay and Cangöz, 2016) between two consecutive posters, to relax the eye positions and bring it to the center of the screen. The eye tracking tool enables us to analyze customer

behavior by generating impartial neurophysiological responses and reducing potential behavioral prejudices. After the participant completed the eye tracking experiment, they were administered a survey questionnaire on understanding the impact of visual attention on brand awareness (on a 5-point Likert scale).

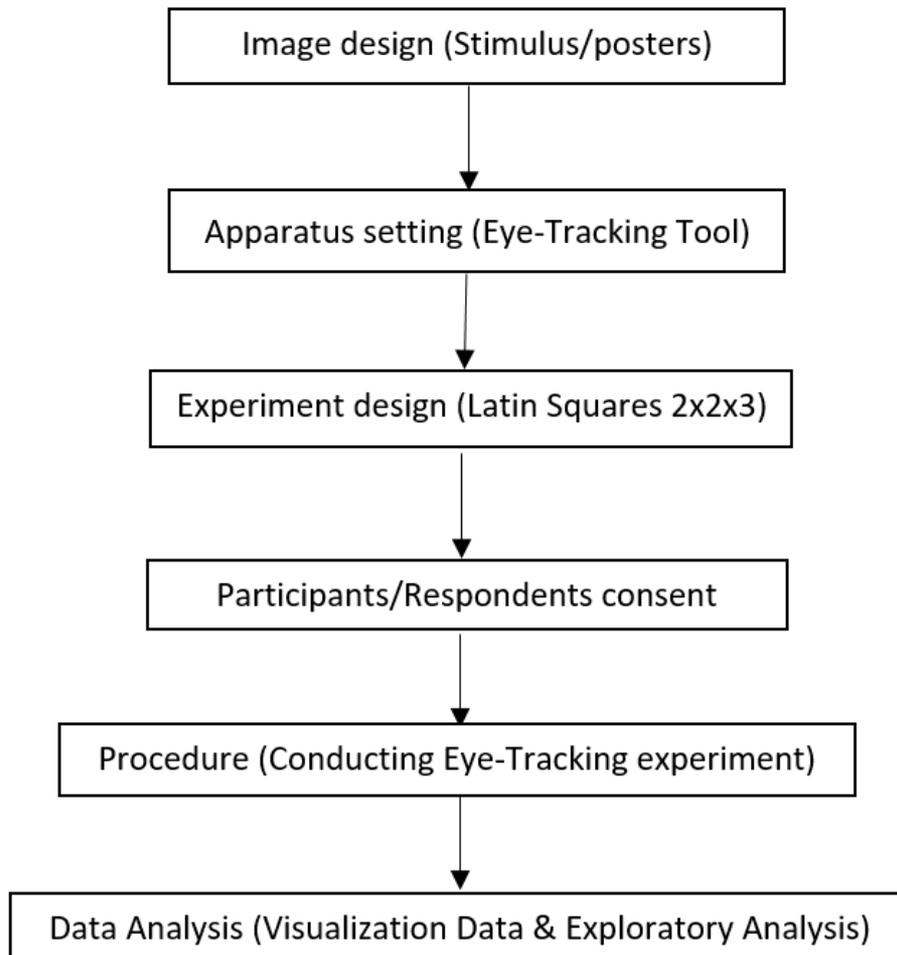
### *Data Analysis*

The Tobii eye tracking software generates the data on the Areas of Interest (AoI) marked on the stimuli of the poster, along with the descriptive statistics. AoIs are the indicated regions on each element on the poster for which comprehensive information can be acquired. For each AOI, we obtained visualization indicator data for Fixation Duration (FD) and Fixation Count (FC). Gaze Plots and Heat maps were also generated for visual interpretation and analysis, as mentioned in Fig. 4. Gaze plot data was used to collate data for fixation duration and fixation count. Heat maps summarized larger quantities of data where the respondent fixated for the maximum time.

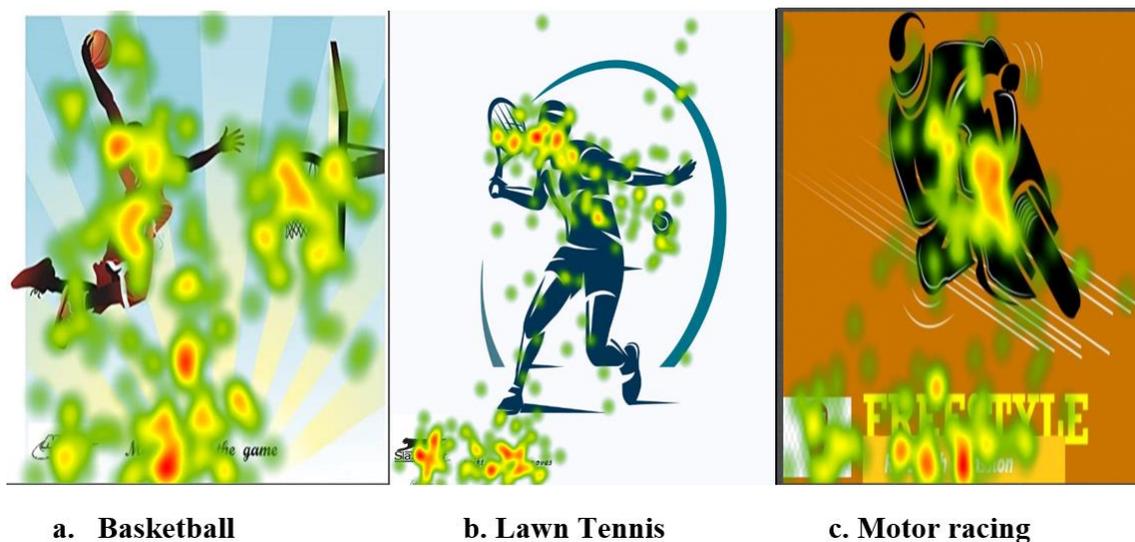
### *Exploratory Analysis*

The attention indicators values are expressed as a continuous variable for Fixation Duration (FD): That is, the Mean (A), Median, and Standard Deviation (SD) are reported in Table 2. Mann-Whitney U tests were carried out to analyze the significance of the articulated matter on perceived congruence and visual attention and to study the significant effect of perceived congruence on visual attention. When the dependent variable is either continuous or ordinal, the Mann-Whitney U test is used to compare variances between two independent groups. As the data under consideration has non-normal distribution, the non-parametric Mann-Whitney U test was performed for continuous variables with a 95% confidence interval. Various Mann-Whitney U coefficients indicating the significance level with a p-value <0.05 was obtained from the comparative study of stimuli G1 & G3 and G2 & G4 based upon the non-parametric analysis of indicators, i.e., Fixation Duration (FD) on the AOI (Brand) and is reported below.

Referring to the research question under investigation in the study, whether articulation in a sports poster improves visual attention and congruence compared to a non-articulated sports poster, descriptive statistics of visual attention i.e., median and mean of fixation duration (brand) for the experimental groups G1 (congruent, articulated) and G3 (congruent, non-articulated) is analyzed by comparing the attention indicators. Regarding the next research question about whether articulation influences congruence, visual attention, and brand awareness, descriptive statistics of attention i.e., median and mean of fixation duration (brand) for the experimental groups G2 (incongruent, articulated) and G4 (incongruent, non-articulated) are compared.



**Fig. 3:** Flowchart illustrating the overall methodology



**Fig. 4:** Heat map Visualizations of the Stimuli representing data images (with the red color denoting maximum concentration and green indicating the least amount)

**Table 1:** Experimental design and poster group

Experimental group	Sequence of sporting disciplines of posters	Congruency	Articulation
G1	Basketball-lawn tennis-motor racing	Congruent	Yes
G2	Basketball-lawn tennis-motor racing	Incongruent	Yes
G3	Basketball-lawn tennis-motor racing	Congruent	No
G4	Basketball-lawn tennis-motor racing	Incongruent	No

**Table 2:** Indicators AOI (brand) in milliseconds. Mean (A), median, Standard Deviation (SD)

Experiment group	AOI	Fixation Duration (FD)		
		A	Median	SD
G1	Brand	1.16450	1.38	0.5907
G2	Brand	0.59540	0.46	0.4922
G3	Brand	1.21810	1.44	0.6829
G4	Brand	1.45180	1.45	0.9846

Also, to investigate the third research question that whether articulation has a significant impact on brand attention due to the effects of congruence, the effects of articulation on brand awareness due to congruence (vs. incongruence) in both the above cases are assessed. Visualization data from eye tracking heat map images and also ANOVA box plot graph gives an indicatory illustration and additional support to the above analyses.

## Results

### *Analysis of the Impact of Articulation on Perceived Congruence*

Mann-Whitney U test was conducted to evaluate the difference in significance between articulated and non-articulated posters influencing the perceived congruence (H<sub>1</sub>). The experiment group G1 (articulated and congruent) had a mean rank of 10.64 and the sum of ranks was 117.00, whereas for group G3 (non-articulated and congruent), the mean rank was 12.36 and the sum of ranks was 136.00 as given in Table 3.

The test revealed insignificant differences in the perceived congruence due to the articulation of sports posters (median = 1.38, n = 11) and non-articulated posters (median = 1.45, n = 11), U = 51.000, z = -0.624, p = 0.533 (significance level, p < 0.05) (Table 4); effect size (r) = 0.133 (Table 5). Thus, there was negligible significance in the effect of articulation to non-articulation influencing the perceived congruence. As a result, hypothesis H<sub>1</sub> is not supported. When the poster was articulated, the respondents did not believe that the sponsoring brands were more congruent than the non-articulated posters. The individual respondents do not detect a higher level of congruent associations fit in any of the elements by articulating the poster.

### *Analysis of the Impact of Articulation on Sponsor Brand*

The second Mann-Whitney U Test was conducted to test the hypothesis (H<sub>2</sub>) based upon the non-parametric

analysis of indicators, i.e., Fixation Duration (FD) on the AoI of the sponsoring brand in the experiment groups G2 (articulated-incongruent) and G4 (non-articulated-incongruent). Analysis suggested that for articulated posters, the mean rank was 8.64 and the sum of ranks was 95.00, whereas for the non-articulated posters, the mean rank was 14.36 and the sum of ranks was 158.00 (Table 6). The visual attention in the articulated posters (Mean = 0.5954, SD = 0.4922) was distinctly significant as compared to non-articulated posters (Mean = 1.4518, SD = 0.9846) as given in Table 2. Thus, hypothesis H<sub>2</sub> is not supported. When the poster was not articulated, the subjects focused more on the brand. This suggests that defining the sponsorship relationship in a sports poster in the form of articulation reduces the amount of visual attention paid to the brand rather than focusing more on the text.

### *Analysis of Articulation on Visual Attention of Brand in Case of Incongruence Association*

This Mann-Whitney U test also demonstrated significant differences in visual attention due to the articulation of sports posters (Median = 0.46, n = 11) and non-articulated posters (Median = 1.44, n = 11), U = 29.000, z = -2.069, p = .039, (significance level, p < 0.05); r = 0.441 (effect size). Comparing the analysis results of the Mann-Whitney U test as shown in Table 4 and 7, the difference in significance of the effect of visual attention due to articulation was medium to large in the case of incongruent sponsor fit as compared to the congruent sponsor fit where the significance was negligible. Thus, we can conclude that where there is a lack of congruence, articulation has a substantial impact on visual attention, which influences the recall of the brand. Respondents develop a greater brand recall when there is a low congruence fit between the sponsor and the sporting discipline. Thus, hypothesis H<sub>3</sub> is supported. Therefore, referring to the research questions in the study, articulating the sporting event posters improves visual attention and congruence as compared to non-articulated posters in cases of incongruent association of sponsored events and the brand. Articulation of the sports posters in an incongruent

event-brand pairing significantly improves the congruence that enhances the visual attention on the brand, influencing brand awareness. Whereas, in the case of congruent associations, articulating the sports sponsorship posters did not enhance the fit beyond a certain point, having a negligible impact on visual attention and thus not having any effect on brand awareness. But articulation has a significant impact on brand awareness in those sporting event posters, where the congruence effect is low between the event and the brand.

*Test Statistics for Fixation Duration (Brand)*

In addition, heat maps, as given in Fig. 3, show differences in "heat", which is represented by the red,

green, and yellow color on the product's brand logo and articulated text in the sports sponsorship posters. It comprises of three sports posters mainly (a) Basketball, (b) Lawn tennis and (c) Motor racing used as stimuli in the study to capture participants' visual attention. It is denoted by heat maps images of different colors based upon the duration, such as red for maximum duration, green for minimum duration and yellow for in between. There are differences in visual attention (fixation duration) because of the difference in articulation and congruency factors of various sporting disciplines in the sports posters, consistent with our hypothesis tests.

**Table 3:** Mann-Whitney U analysis of experimental groups G1-G3, fixation duration (brand) addressing the impact of articulation on perceived congruence rank statistics for fixation duration (brand)

Respondent articulated congruent	N	Mean rank	Sum of ranks
Articulation	11	10.64	117.00
Non-articulation	11	12.36	136.00
Total	22		

**Table 4:** Mann-Whitney U analysis of experimental groups G1-G3, fixation duration (brand) addressing the impact of articulation on perceived congruence test statistics for fixation duration (brand)

Mann-Whitney coefficients	Fixation duration (brand)
Mann-Whitney U	51.000
Wilcoxon W	117.000
Z	-0.624
Asymp. Sig. (2-tailed)	0.533
Exact Sig. [2*(1-tailed Sig.)]	0.562 <sup>b</sup>

p<0.05

**Table 5:** Effect size

Effect size (r) = Z/square root of N  
 where Z-coefficient value in the Mann-Whitney U test  
 N-Total no. of samples  
 According to Cohen *et al.* (1998) criteria:  
 .1 = small effect  
 .3 = medium effect  
 .5 = large effect

**Table 6:** Mann-Whitney analysis of experimental groups G2-G4, fixation duration (brand) addressing the impact of articulation on perceived visual attention rank statistics for fixation duration (brand)

Respondent articulated incongruent	N	Mean rank	Sum of ranks
Articulation	11	8.64	95.00
Non-articulation	11	14.36	158.00
Total	22		

**Table 7:** Mann-Whitney analysis of experimental groups G2-G4, fixation duration (brand) addressing the impact of articulation on perceived visual attention test statistics for fixation duration (brand)

Mann-Whitney coefficients	Fixation duration (brand)
Mann-Whitney U	29.000
Wilcoxon W	95.000
Z	-2.069
Asymp. Sig. (2-tailed)	0.039
Exact Sig. [2*(1-tailed Sig.)]	0.040 <sup>b</sup>

p<0.05

### Analysis of the Effect of Articulation on Brand Awareness

The impact of visual attention on brand awareness due to articulation influenced by perceived congruence was tested using an ANOVA analysis (Table 8). The results indicate that there is no significant impact on the brand awareness of sponsors because of visual attention due to articulation in the sports posters ( $F(8,13) = .638, p = 0.734, \eta^2 = 0.281$ ); thus, hypothesis  $H_4$  is not supported.

Box plot graph of ANOVA distribution (Fig. 5) shows that for experimental group G1 (congruent and articulated) the median for fixation duration (brand) is 1.38, with the minimum mean for fixation duration (brand) being 0 and the maximum mean for fixation duration (brand) is 2.35. This data distribution shows a huge range of variation with quartile Q1 at 0.85, Quartile Q2 at 1.38 i.e., median, and quartile Q3 at 1.41. This suggests that 25% of total respondents' mean Fixation duration (brand) falls in or below the Q1 mark of 0.85, 50% of total respondents' mean fixation duration (brand) falls in or below the Q2 mark of 1.38, then 75% of total respondents' mean fixation duration (brand) mean falls in or Q3 1.41. The inter-quartile range i.e., Q3-Q1 is less, which means there is not much deviation in the means of fixation duration (brand) with regards to the median and fewer variation data. But the skewness of the boxplot shows that the Q3 median value of 1.41 is much closer to the Q2 range of 1.38 which represents that one-fourth of the total distribution heavily lies in that range as compared to the Q1 mark.

Similarly, analysis of the Box plot graph of ANOVA distribution for experimental group G3 (congruent and non-articulated) shows that the median for fixation duration (brand) is 1.45, with minimum fixation duration (brand) mean is 0.25 and the maximum mean for fixation duration (brand) is 1.95. This data distribution shows a slightly less range of variation with quartile Q1 at 0.65, quartile Q2 at 1.45 i.e., median, and quartile Q3 at 1.75. This suggests that 25% of total respondents' mean fixation duration (brand) falls in or below the Q1 mark of 0.65, 50% of total respondents' mean fixation duration (brand) falls in or below the Q2 mark of 1.45, then 75% of total respondents' mean Fixation duration (brand) mean falls in or Q3 1.75. The inter-quartile range i.e., Q3-Q1 is large, which means the data is fairly evenly distributed along the median and the variation is large. But the skewness of the boxplot shows that the Q3 value of 1.75 is much closer to Q2 as compared to Q1 which

represents that one-fourth of data nearing the Q3 mark lies closer to the median value as compared to the Q1 mark.

Box plot graph of ANOVA distribution (Fig. 6) shows that for experimental group G2 (incongruent and articulated) the median for fixation duration (brand) is 0.46, with the minimum mean for fixation duration (brand) is 0.13 and the maximum mean for fixation duration (brand) is 0.93. This data distribution shows a compact variation with Quartile Q1 at 0.28, quartile Q2 at 0.46 i.e., median, and quartile Q3 at 0.80. This suggests that 25% of total respondents' mean fixation duration (brand) falls in or below the Q1 mark of 0.28, 50% of total respondents' mean fixation duration (brand) falls in or below the Q2 mark of 0.46, then 75% of total respondents' mean fixation duration (brand) mean falls in or Q3 0.80. The inter-quartile range i.e., Q3-Q1 is quite less, which means the data is fairly uniformly distributed along the median and does not have many deviations from the median. Also, there is not much skewness as the median lies evenly between Q3 and Q1 marks.

Similarly, analysis of the box plot graph of ANOVA distribution for experimental group G4 (incongruent and non-articulated) shows that the median for fixation duration (brand) is 1.44, with minimum fixation duration (brand) mean is 0 and the maximum mean for fixation duration (brand) is 3.20. This data distribution shows a huge range of variation with quartile Q1 at 0.58, quartile Q2 at 1.44 i.e., median, and Quartile Q3 at 2.10. This suggests that 25% of total respondents' mean Fixation duration (brand) falls in or below the Q1 mark of 0.58, 50% of total respondents' mean fixation duration (Brand) falls in or below the Q2 mark of 1.44, then 75% of total respondents' mean fixation duration (brand) falls in or below Q3 mark 2.10. The inter-quartile range i.e., Q3-Q1 shows that the data is equally distributed inside and outside the range box. Also, not much skewness in data is noticed as the median value lies in the mid of the inter-quartile range.

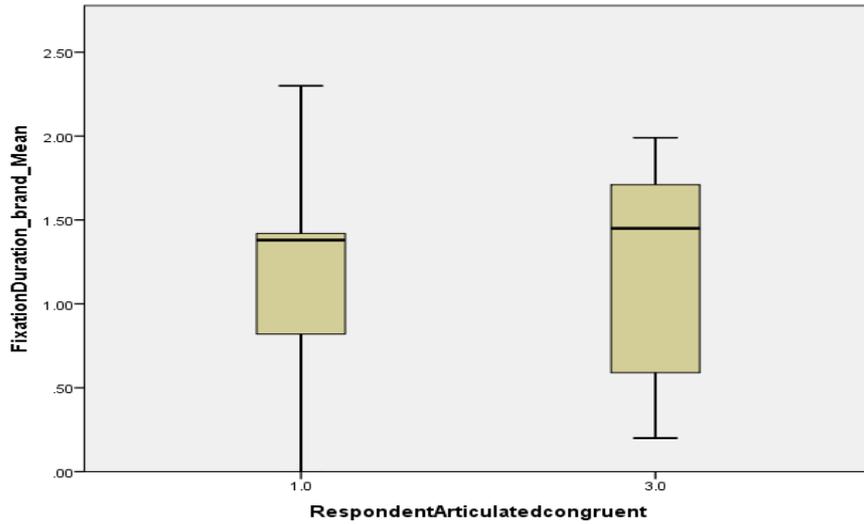
### Findings

The Mann-Whitney U test results do not support the hypothesis that perceived congruence is affected by articulation ( $H_1$ ) or that articulating the posters improves visual attention ( $H_2$ ), but they do support the hypothesis that visual attention was significantly different in articulated posters than in non-articulated posters in case of low congruence fit ( $H_3$ ). These findings might be due to many reasons and they can be explained by referring to the AOI fixations data.

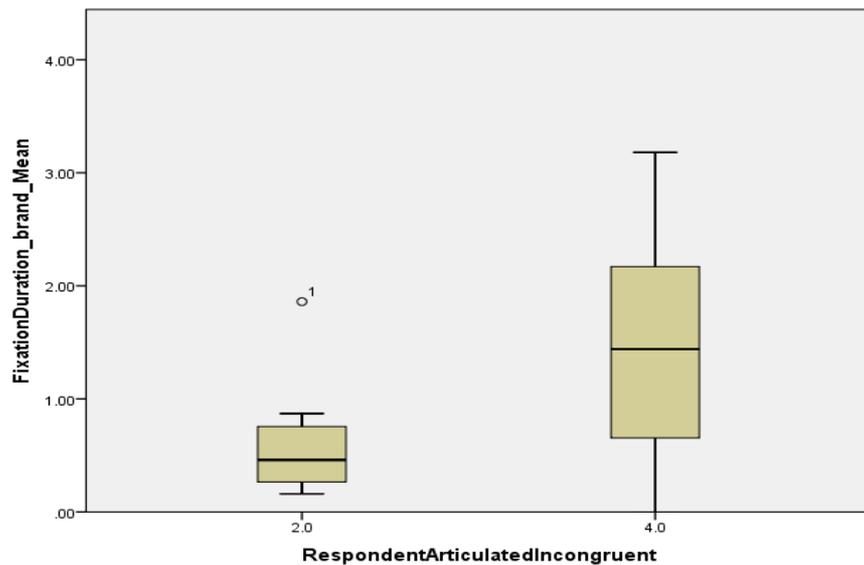
**Table 8:** ANOVA analysis assessing the impact of articulation on brand awareness ANOVA

Groups	Sum of squares	df	Means square	F	Sig.
Between groups	1.5500	8	0.194	0.638	0.734
Within groups	3.9500	13	0.304		
Total	5.5008	21			

Sig.  $p < 0.05$



**Fig. 5:** ANOVA box plot graph illustrating the distribution in groups G1 and G3



**Fig. 6:** ANOVA box plot graph illustrating the distribution in groups G2 and G4

In the first case, articulating the poster enhanced the coherence of the incongruent sponsoring brand to such an extent that they were at par with the congruent sponsors, effectively closing the disparity between them. According to research by Coppetti *et al.*, 2009, this scenario was possible because congruent sponsors had an obvious edge over incongruent sponsors, lessening the impact of articulation on them. The next case possibly could come from the fact that articulating the posters brings a null or contradictory impact on congruence, thereby declining the effect on sponsoring brands that are congruent. As per

the study by Olson and Thjømøe (2011), the type of articulated message may have an impact on this circumstance. In this study, the articulation was of a socially-oriented text which could be perceived as less impactful; maybe articulated messages based on socioeconomic rewards (Fröber *et al.*, 2018) would have a substantial impact on congruent sponsorships. Further, articulation may reduce the impact of visual attention, obstructing the association that the articulation is trying to establish. Thus, the articulation has the exact contrasting impact as one would have thought. When there is an

articulated message, the respondent spends time reading the articulated message, thus limiting the time available for cognitively imbibing the brand and the remaining elements of the poster. The subject will be unable to determine the message's congruency if the poster's brand is not processed properly. As a result, any sponsorship blindness (Dos Santos *et al.*, 2019a) would reduce the impact of the congruent association. Furthermore, the ANOVA test revealed that the articulation of sports posters does not have any significant impact on the brand awareness of the sponsor (H<sub>4</sub>). Articulating the text message in sports sponsorship posters does not influence brand recall or awareness.

### *Theoretical Contributions*

The results found here have important contributions to academic literature related to sponsorship theory. First, this study helps in studying the effect by which an articulation connects an incongruent sponsor with an event in the mind of an audience. Although any articulation is supposed to associate the sponsor with a brand in the mind of a consumer, the uniqueness of our study is its foci on the comparative effect of articulation with no articulation.

In addition to enhancing perceived fit relative to a certain group, we found no differences in perceived congruency due to articulation across other experimental conditions. This inferred that providing additional information in the form of articulation to develop a fit beyond the perceived limit does not further help in improving the association. Presumably, once the cognitive relation fit is established between the sporting event and sponsor, further information becomes non-impactful.

Studying the differences between various other factors impacting the sponsorship is significant as it leads to a conceptual comprehension regarding how the incongruent sponsor could be aligned with the theme of the sporting event. Better conceptual knowledge regarding the execution of various types of articulating methods towards improving the perceived fit shall guide to better implementation of articulation techniques practically.

Lastly, most of the previous research on sports sponsorship has used the survey method with studies that involve limited quantitative operationalizations of the concept. The present study extends this limited (quantitative) research on perceptions of consumers about sponsorship and brand by utilizing the eye tracking technology that considers the mechanism of visual attention influencing cognitive behavior. It provides us with newer insights into consumer behavioral studies opening up fresher avenues to

further deep dive into consumer psychology behind the purchase process using cognitive mechanisms.

### *Managerial Implications*

There would be few managerial implications of this research article based on the outcomes of the hypothesis and the situations analyzed. The first would be to study the effects of articulation in sports posters as it did not significantly improve the congruence of sponsorship; hence decision should be made accordingly on whether resources should be invested in this action or not. Secondly, if articulation is considered, the credibility of articulation should be analyzed. Finally, this study proposes that sports companies should examine the different possibilities available, such as articulation or poster design and beautification, in order to increase sponsor visual attention. This research study also allows practitioners to construct a variety of sponsored communications in media designs and evaluate them for maximum effectiveness. This research studies the effects of performance metrics of retention and attention, so articulating the stimuli in this communication through sports posters and articulation messages based on social context is tough. These results would mainly affect the medium of sports posters. Other mediums of communication, such as radio and the internet, for example, may provide different effects.

### **Conclusion**

The results demonstrated that there is no significant impact of articulation noticed on perceived congruence, visual attention, or brand awareness. The articulation has an effect on the visual attention of those advertisement posters of low perceived congruence. As a result, it is recommended that articulation is not effective when used in sponsorship in the context of a sports advertisement and that a variety of other poster designs be made and evaluated to see which one draws the greatest brand visual attention.

### *Limitations and Scope of Future Research*

This research study's major flaws provide us with possibilities for carrying out further research. This research study considers a specific medium, such as sports sponsorship posters within a limited geographical area. Next, the sample size was limited to 44 only, with the majority of respondents being university campus students with an average age between 20 to 42 years. Future studies could be conducted with a larger sample size covering bigger areas and different socio-economic contexts. Articulation of sponsorship posters is an effective means

of promoting a product to a bigger audience, yet such persuasive techniques are nuanced and intricate. The use of sports sponsorship posters for the test might be a limitation as it requires a greater cognitive ability within a short span of time, the reason being sponsor blindness which refers to the tendency of the subjects to avoid processing and paying attention to sponsorship brand. The inclusion of articulation might have an effect on the neuro-physiological processing of the visual data, thus influencing visual attention and giving rise to sponsor blindness due to an overload of information. Finally, analysis of such future studies should be carried out using various other techniques such as Electroencephalogram (EEG) and Functional Magnetic Resonance (fMRI) combined with eye tracking to study consumer behavioral patterns.

This study was carried out with three sporting discipline posters selected as per convenience without considering the representation of the larger number of practitioners or fans. Studies could be conducted by changing the area of action and other variables such as the positioning of sponsors. Alternate investigations could be done by using algorithms capable of predicting and evaluating the exposure of sponsor brands in various other forums. Future studies could be done by replicating the same experiment in different socio-political contexts with other sporting disciplines too. The type of articulation also matters so future studies could take into account other types of articulation, such as analogical or socio-financial. This study was purely quantitative, so in the future, mixed-method or, specifically, a qualitative study could be conducted that would generate different insights.

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## Author's Contributions

**Surya Bahadur Thapa, Prasun Gahlot and Komal Suryavanshi:** Performed the experiment, acquisition of data, written a literature review, analysed of data, and interpretation and drafted of the article.

**Aradhana Gandhi:** Conception and designed of experiment, organized the study, co-ordinated all authors.

**Ramakrishnan Raman:** Organised the study, critical reviewed for intellectual content.

## Ethics

The authors confirm that this study was prepared in accordance with rules and regulations of Symbiosis International University. All the concerned stakeholders undertaking the study including authorities, researchers, and participants were duly informed and consent was obtained.

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