Gender Stereotypes in Sports and Advertising: Evidence from Eye-tracking

Yueming Geng

YK Pao School, Shanghai, China.

Abstract

Gender stereotypes have long been a pervasive phenomenon in human society, imposing constraints upon women for centuries. Regardless of age, background, or identity, females commonly share experiences of bias. Despite the fundamental principle of fairness that underpins sports as a competitive endeavor, gender stereotypes remain prevalent within this domain. One example is the significant disparity in income and commercial valuation between female and male athletes. This research employs eye-tracking technology to delve into people's gaze patterns while viewing advertisements featuring both female and male football players. This approach aims to uncover disparities in attention directed towards each gender. Participants were exposed to advertisements showcasing diverse products, with either a female or male football player as the model. The eye-tracker recorded gaze data during these sessions. The findings reveal a significant difference: the female football players got significantly longer fixation duration and more fixation counts compared to their male counterparts. Intriguingly, male participants exhibited a greater fixation count towards the female football player. Additionally, participants displayed heightened attention towards products featured alongside female football players in the advertisements. These outcomes likely stem from the perception that female football players and the sport itself are incongruent, a misalignment likely influenced by gender stereotypes. The quantitative findings underscore the persistence of gender stereotypes, particularly concerning female football players. More efforts are needed to mitigate bias and dismantle stereotypical perceptions towards women.

Keywords

Stereotype, gender, bias, sport, football, athlete, eye-tracking

1. Introduction

Stereotypes are widely pervasive within human society. Individuals often categorize people or objects based on societal values, contributing to the formation of enduring stereotypes. Once established, these stereotypes tend to exhibit high stability and resistance to change. On one hand, stereotypes can serve to streamline cognitive processes, reducing cognitive load. However, they can also foster cognitive inertia and bias, impeding the acceptance of novel perspectives (Nelson, Acker, & Manis, 1996; Bargh, 1989). Gender stereotypes in the workplace have garnered substantial attention, particularly as more women have entered the workforce. Workplace gender stereotypes involve biased, rigid, or overly simplified gender-based categorizations in career contexts, often associating certain professions with men or women and perpetuating the notion of male superiority in select occupations (Tong & Hou, 2009). Even in the face of contemporary advocacy for gender equality, such stereotypes continue to persist in certain professions.

Sports, as domains emphasizing competition, inherently prioritize fairness. Nonetheless, biases rooted in gender,
religion, or race have been shown to impede the wholesome evolution of sports (Zhang, 2022). The Olympics, for instance, were initially marked by pronounced gender discrimination, evidenced by restrictive qualifications and events for female athletes, disparate remuneration for equivalent work between male and female athletes, and even instances of sexual harassment in sports (Kang & Liu, 2014). In the present day, female athletes still contend with significantly lower earnings, fewer welfare benefits, reduced social attention, restricted voice, and diminished decision-making authority compared to their male counterparts. This financial discrepancy extends beyond salaries, encompassing commercial valuation and advertisement fees. The ensuing research is directed at exploring the realm of gender stereotypes, with a focus on sports, particularly football.

This study delves into the gender stereotypes surrounding female and male football players as portrayed in advertisements. Directly questioning individuals about their stereotypes may yield inaccurate responses, as admitting to biases might compromise their social image. When measuring "negative traits" such as stereotypes, an implicit approach proves more accurate (Dovidio, Kawakami, & Gaertner, 2002). Whereas prior investigations often relied on indirect measures like the Implicit Association Test (IAT) to assess stereotypes (Wang, 2015; Zhang, 2022; Li, 2022). This study adopts an innovative approach by utilizing eye-tracking technology. Eye-tracking facilitates the acquisition of direct, quantitative, and objective data, offering researchers an intuitive and precise understanding of stereotype occurrences. Importantly, stereotypes are not fixed entities; they can evolve and transform over time (Wang, 2015; Zhang, 2014; Blair, Ma, & Lenton, 2001; Blair & Banaji, 1996). This study contributes novel insights into contemporary gender stereotypes in sports and advertising, offering a fresh perspective. Furthermore, it enriches the toolkit of methods for investigating stereotypes.

This study engaged a total sample of 24 participants (mean age = 31.65, SD = 10.96), comprising 13 females and 11 males. The participants were randomly selected from Shanghai, China. Ahead of the project commencement, participants were provided with an overview that this endeavor constituted a social science experiment. Their involvement would entail viewing a series of advertisements, while an eye-tracking system would be employed to document their ocular fixation patterns. Additionally, participants were apprised that they would receive dessert items as tokens of appreciation upon completing the experiment. It merits noting that participation was entirely voluntary, and individuals were free to withdraw from the project at any point if they felt uncomfortable.

2. Methods

2.1 Participants

This study engaged a total sample of 24 participants (mean age = 31.65, SD = 10.96), comprising 13 females and 11 males. The participants were randomly selected from Shanghai, China. Ahead of the project commencement, participants were provided with an overview that this endeavor constituted a social science experiment. Their involvement would entail viewing a series of advertisements, while an eye-tracking system would be employed to document their gazing data. Additionally, participants were apprised that they would receive dessert items as appreciation upon completing the experiment. It merits noting that participation was entirely voluntary, and individuals were free to withdraw from the project at any point if they felt uncomfortable.

2.2 Stimuli

Two commercial advertisements featuring soft drinks have been selected as the stimuli for this study, denoted as D1 and D2 for the purposes of subsequent reference. The stimuli incorporate the depiction of two distinct football players—one female and one male. The experimental materials encompass four distinct advertisement posters, each aligning with specific combinations of stimuli: P1 (featuring D1 and the female football player), P2 (featuring D2 and the female football player), P3 (featuring D1 and the male football player), and P4 (featuring D2 and the male football player). Importantly, both the female and male football players are presented in an identical position across all posters, and the font size of textual content is consistently standardized throughout.

2.3 Design and Procedure

Participants were randomly recruited for the experiment, with their consent obtained through the signing of informed consent forms, affirming their voluntary participation. Demographic information, encompassing gender and age, was gathered from the participants for subsequent analytical purposes. Subsequently, participants were instructed to position
themselves in front of a screen equipped with the Tobii 4C eye-tracker. This eye-tracker was linked to a laptop running Tobii Pro Lab software. To ensure optimal calibration and precise eye gaze data acquisition, participants were initially guided through a nine-point calibration procedure. Following the completion of calibration, the main experiment commenced.

An introductory slide served to apprise participants of the requirement to maintain their visual focus on the screen throughout the course of the experiment. Thereafter, the screen autonomously displayed a sequence of four distinct advertisement images, with the sequential order uniform for all participants. The duration of display for each image is approximated 10 seconds. Participants of Group 1 viewed P1, P4, and two other advertisements serving as interference items. Group 2 viewed P2, P3, and two other advertisements serving as interference items.

Furthermore, the Areas of Interest (AOIs) for each advertisement were categorized into three distinct classes: the athlete, the product (beverage), and the textual content adjacent to the athlete denoting "The brand ambassador – the female/male football player XYZ," wherein "XYZ" signifies the athlete’s name. The Tobii eye-tracker meticulously captured participants' gazing behaviors during the viewing process. Comprehensive metrics, including Total Fixation Duration (TFD) and Fixation Count (FC), were utilized to discern and quantify the distribution of participants' visual attention across these AOIs.

3. Data Analysis

To assess potential variations in participants’ attention allocation to AOIs, the statistical analyses of eye-tracking parameters are executed. Specifically, t-tests pertaining to TFD and FC are performed across several comparisons: between the female and male football players; between the beverage with the female player and the male player; and between the textual content aligned with the female player and that associated with the male player. Meanwhile, an examination of potential dissimilarities in the viewing behavior of female and male participants in response to the presented posters is conducted through t-test analyses.

3.1 FC and TFD Analyses Between Female and Male Athletes

As depicted in Table 1, the T-test results for FC reveal a statistically significant difference (t=1.69, p<0.05) in fixation counts between the male athlete (M=4.08, SD=2.36) and the female athlete (M=6.00, SD=4.31). Conversely, the TFD T-test yields no significant difference (t=1.68, p>0.05) between the female athlete (M=1.41, SD=1.08) and the male athlete (M=1.04, SD=0.97).

3.2 FC and TFD Analysis Among Male Participants Regarding Female and Male Athletes

As presented in Table 2, the T-test outcomes indicate a no significant difference (t=1.72, p>0.05) in total fixation duration between the male athlete (M=1.05, SD=1.04) and the female athlete (M=1.57, SD=1.10). However, male participants exhibit a significantly higher fixation count (t=1.76, p<0.05) towards the female athlete (M=7.45, SD=4.48) compared to the male athlete (M=3.2, SD=2.04).

3.3 FC and TFD Analysis Among Female Participants Regarding Female and Male Athletes

As indicated in Table 2, T-test results for female participants reveal no significant difference (t=1.71, p>0.05) in fixation counts between male athletes (M=1.03, SD=0.95) and female athletes (M=1.27, SD=1.09). Moreover, fixation counts between male athletes (M=4.31, SD=2.66) and female athletes (M=4.77, SD=3.92) also display no significant difference (t=1.72, p>0.05).

3.4 FC and TFD Analysis of the Product

As illustrated in Table 3, there exists no statistically significant difference (t=1.68, p>0.05) in the fixation count of the product within advertisements between the male athlete group (M=5.46, SD=5.87) and the female athlete group (M=9.38, SD=6.37). However, the TFD of the product within the male athlete advertisement (M=1.79, SD=1.51) is significantly smaller (t=1.68, p<0.05) compared to that within the female athlete group (M=2.51, SD=1.39).

3.5 FC and TFD Analysis of the Texts

As outlined in Table 3, the T-test results highlight no significant difference (t=1.68, p>0.05) in TFD of the texts within
advertisements featuring male athletes (M=1.59, SD=1.11) versus female athletes (M=1.51, SD=1.13). Moreover, the T-test analysis fails to identify a significant difference (t=1.68, p>0.05) in FC of the texts between male athletes (M=6.25, SD=2.52) and female athletes (M=6.54, SD=4.55).

<table>
<thead>
<tr>
<th>Table 1. TFD and FC results of all participants</th>
<th>TFD (s)</th>
<th>FC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male athlete</td>
<td>1.04</td>
<td>4.08</td>
</tr>
<tr>
<td>Female athlete</td>
<td>1.41</td>
<td>6.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 2. TFD and FC results of male and female participants</th>
<th>TFD (s)</th>
<th>FC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male athlete</td>
<td>1.05</td>
<td>4.31</td>
</tr>
<tr>
<td>Female athlete</td>
<td>1.27</td>
<td>4.77</td>
</tr>
<tr>
<td>Male participants</td>
<td>1.57</td>
<td>7.45</td>
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<thead>
<tr>
<th>Table 3. TFD and FC results for the product and the text of male and female participants</th>
<th>TFD (s)</th>
<th>FC</th>
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<tr>
<td>Female athlete</td>
<td>2.51</td>
<td>9.38</td>
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<tr>
<td>Male athlete</td>
<td>1.79</td>
<td>8.46</td>
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<table>
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<tr>
<th>Text</th>
<th>Product</th>
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<tr>
<td>6.54</td>
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4. Discussion

The objective of this study is to delve into gender stereotypes within occupations and advertisements. In this experimental investigation, participants were exposed to two soft drink advertisements. The first set of advertisements featured a female football player as the model, while the second set showcased a male football player. The utilization of an eye-tracker enabled the capture of participants' gazing behaviors, providing quantitative gazing data that unveiled the attention distribution towards the advertisement posters. T-test results show that participants exhibited significantly higher fixation counts on the female athlete than the male athlete. Moreover, when scrutinizing the gender-related variance among male and female participants, the outcomes unveiled that male participants directed greater fixation duration and counts towards the female football player. This disparity was also manifested in a heightened fixation on the product within the advertisements featuring the female athlete.

The aforementioned outcomes illuminate that, in comparison to their male counterparts, participants allocated greater attention to the female football player within the context of the advertisement. This discrepancy could potentially be attributed to prevailing gender stereotypes related to occupations. Occupational gender stereotypes encompass the inclination to categorize occupations rigidly, relying on simplified gender-based attributions. Such stereotypes often manifest as the perception that certain professions are inherently suited for either men or women (Tong & Hou, 2009). Evidently, "football player" and "female" are not readily harmonized concepts. Consequently, when confronted with the juxtaposition of these terms in the advertisement, participants' heightened attention can be attributed to their inclination to seek confirmation or validation of this incongruity.

Furthermore, the study unearthed that female participants did not exhibit a significant preference for either the female or male football player. In contrast, male participants demonstrated a marked increase in fixation duration and counts towards the female athlete. This outcome underscores the prevalence of stronger gender stereotypes among males, findings that corroborate with prior research (Zhang, 2002; Liu, 2006; Li, 2020). As societal norms shift and educational opportunities expand, an increasing number of women are venturing into diverse professional realms, encompassing roles such as educators, laborers, financiers, engineers, and athletes (Ueno, 1997). Given that many workplaces have traditionally been male-dominated, the reluctance to revise established mental frameworks or relinquish deeply ingrained gender stereotypes becomes more evident.
Statistical analyses have further illuminated that the product featured within advertisements showcasing the female athlete experienced significantly longer fixation durations, implying heightened attention capture. This finding offers an intriguing departure from previous expectations. Preceding studies have posited that women typically exhibit a greater focus on male spokespersons and the associated endorsed products. Moreover, female consumers wield substantial purchasing influence, prompting brands to select male celebrities with a broader female fan base to augment sales (Song, 2021). However, the deviations in this study might be attributed to the unique gender dynamics in sports. The unfamiliarity of participants with the concept of a female football player appears to have elicited curiosity, not only towards the model but also towards the product advertised. Consequently, this heightened inquisitiveness has translated into an extended fixation duration on the product itself.

While strides towards gender equality have been accomplished over the years, this study underscores the persistence of gender stereotypes across multiple spheres, as highlighted in its findings. Mitigating actions remain essential, encompassing strategies such as the infusion of gender equality principles into educational curricula and the establishment of equitable remuneration structures. Future investigations could extend the scope of this research. Given that racial and geographical disparities have been identified as factors influencing occupational gender stereotypes, expanding the study’s participant pool to encompass diverse regions within China or different cultures could yield enlightening outcomes (Cai, 2008). Moreover, the current study’s relatively modest participant size warrants expansion for more comprehensive outcomes. Additionally, broadening the scope to encompass varied products and occupations is a potential avenue for future exploration, considering the possible impact of product and occupation types on study outcomes.

5. Conclusion

This experiment is centered around an examination of gender stereotypes within both occupational contexts and advertisements. The outcomes derived from eye-tracking analyses reveal a distinct propensity among participants to direct their attention more intently towards the female football athlete depicted in the advertisements, as opposed to the male athlete. This heightened level of interest in the female athlete can potentially be attributed to the prevailing gender stereotype entrenched within the domain of football. Conventionally, the prevailing association of football players is with the male gender.

Interestingly, the analysis also unveils a noteworthy pattern: male participants exhibit a greater degree of attention towards the female athlete compared to their female counterparts. This discrepancy hints at the likelihood of males holding more entrenched gender stereotypes. To counteract these implicit biases, proactive endeavors towards fostering gender equality become imperative.

References


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