Eye-Tracking Fashion: Assessing the Influence of Consumer Traits on Visual Attention on Fashion Advertisements

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Background and Purpose. Eye-tracking technology has been used across various industries such as psychology, marketing, and advertising because it can provide accurate insights into consumers' visual attention. In the fashion industry, studying viewers' attention can offer suggestions to fashion designers, visual merchandisers, fashion advertisers, enabling them to refine their products before launching them to the public (Lee et al., 2021).

However, despite its practical significance in the fashion field, academic research on the use of eye-tracking technology in fashion didn't begin until Ju and Johnson's study in 2010. The development of research in this area has been hindered by limited accessibility to eye-tracking technology and the complexity of experimental design. Recently, there has been an increase in research using eye-tracking devices to investigate consumers' visual attention towards fashion images in magazines or social media (Contero-López et al., 2022; Cummins et al., 2021; Tiggemann et al., 2019). Previous studies have primarily focused on how changes or variations in fashion advertisements influence consumers' visual attention. For instance, Tiggemann et al. (2019) examined the effect of different forms of labels added to fashion advertisements on women's visual attention. They found that the informational label, compared to no label and graphic label, can direct participants' attention toward the model's body. However, there remains a gap in understanding how consumer traits (e.g., gender, ethnicity, multicultural experiences) influence preferences for viewing fashion advertisements, which have been understudied. Therefore, **the purpose of this research** is to explore how consumers of different genders, ethnicities, fashion interests, and multicultural experiences differ in their visual attention to fashion advertisements. The following hypotheses were proposed: **H1$_{a-d}$**: *Consumers of different a) gender, b) ethnicity, c) fashion involvement, and d) multicultural experiences have various visual attention in response to different elements of a fashion advertisement (e.g., model, product, brand logo).* **H2$_{a-d}$**: *Consumers of different a) gender, b) ethnicity, c) fashion involvement, and d) multicultural experiences differ in their ability to recall the fashion advertisements.* **H3$_{a-d}$**: *Consumers of different a) gender, b) ethnicity, c) fashion involvement, and d) multicultural experiences differ in their intention to purchase the advertised fashion products.*

Method. In this study, college students from a south-western university participated, engaged in an eye-tracking experiment, and answered a self-report designed survey for a comprehensive comparison. Based on the Salience model (Itti et al., 1998), researchers selected 10 fashion advertisements (five for each from Calvin Klein and H&M), which participants viewed for 10 seconds (with the option to proceed) before completing the survey. The survey included items about multicultural experiences (Aytug et al., 2018), fashion involvement (O'Cass, 2004), Ads recall (Cummins et al., 2021), and intention to purchase the advertised

fashion product, using 5-point scales. The Tobii Pro Nano eye-tracker was used in the experiment for attention recording and Tobii Pro Lab was employed to analyze participants' attention (by calculating total fixation duration) and visualize it (through heatmap results); SPSS was used to analyze the survey results.

ANOVA analysis was conducted to compare participants' responses on survey questions. After an 8-days data collection period, 120 participants were recruited in the study. More than 92% of the participants were equal to or younger than 24 years old. Among all the participants, there were 90 **W**omen and 30 **M**en. Participants' ethnicity included **C**aucasian (44), **His**panic/Latino (52), **As**ian/Asian American (8), African/**Afr**ican American (10), and others.

Results. Several rounds of ANOVA analysis were conducted to compare the amount of time (in seconds) spent viewing ads. The results revealed that men and women spent comparable amounts of time on viewing the products from the ads. However, men spent a significantly longer time viewing the top products (M^{M}=14.42; M^{W}=10.83), whereas women spent significantly longer time viewing model faces (M^{M}=17.02; M^{W}=29.72), particularly those of female models (M^{M}=24.37; M^{W}=27.95) and male models (M^{M}=15.57; M^{W}=19.65).

Men and women didn't differ in the time spent viewing model bodies, tattoos on models, and logos on the products. Also, women spent significantly longer time viewing ads with Asian model (M^{M}=6.06; M^{W}=7.25) and Caucasian model (M^{M}=15.19; M^{W}=19.49). Men and women didn't differ in the time spent viewing ads featuring African American, African American, and Native American models. When comparing participants of different ethnicities regarding their attention duration, results indicated that they spent significantly different amounts of time on model faces (M^{Afr}=34.86; M^{As}=22.02; M^{C}=21.55; M^{His}=21.34) and when viewing the bottom products (M^{Afr}=11.20; M^{As}=16.39; M^{C}=19.48; M^{His}=15.63). Moreover, they differed in viewing ads with African American models (M^{Afr}=5.92; M^{As}=3.95; M^{C}=3.58; M^{His}=3.65) and ads with Native American models. They didn't differ in the time spent viewing model bodies, tattoos on models, and logos on the products. K-Means cluster analysis was then conducted to split participants into groups based on high (vs. low) fashion involvement and high (vs. low) multicultural experience. Several rounds of ANOVA analysis were conducted to compare the amount of time each group spent respectively. The results indicated that consumers with high (vs. low) fashion involvement didn't differ in time spent viewing the ads (product, model, logo, etc.), and consumers with high (vs. low) multicultural experience also didn't differ in time spent viewing the ads (product, model, logo, etc.) Thus, $H1_a$ and $H1_b$ were supported, but not $H1_c$ and $H1_d$.

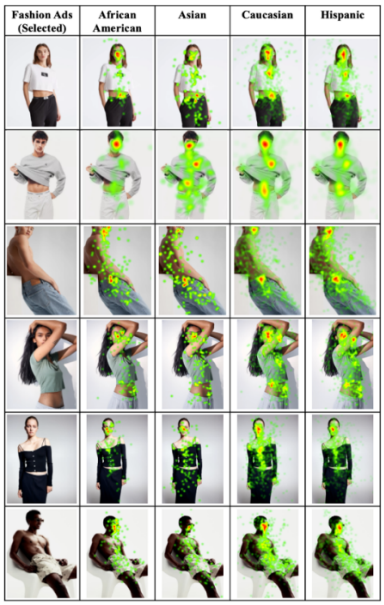

Figure 1. Heatmap Results of Different Participants' Attention (selected results)

Participants' rating on the survey questions related to each ad were aggregated to compare their responses regarding how likely they were to recall seeing the ad and to purchase the fashion product after viewing it. The results indicated that men and women differ in their

intention to purchase the advertised fashion products (M^{M}=2.59; M^{W}=2.24). Consumers of different ethnicities also differ in the intention to purchase the fashion products (M^{Afr}=2.83; M^{As}=2.99; M^{C}=2.12; M^{His}=2.33) and their ability to recall seeing the ads (M^{Afr}=4.28; M^{As}=3.84; M^{C}=3.81; M^{His}=3.55). Also, consumers with different levels of fashion involvement differ in their ability to recall seeing the ads (M^{High}=3.61; M^{Low}=3.87). Thus, $H2_b$ and $H2_c$ were supported, while $H2_a$ and $H2_d$ were not supported. Similarly, $H3_a$ and $H3_b$ were supported, whereas $H3_c$ and $H3_d$ were not supported.

Discussion/implications. The results addressed the two research questions. Consistent with previous research (e.g., Liang & Lee, 2024), consumers spent a considerable amount of time viewing fashion models in the ads. Women (vs. men) and African American (vs. other ethnicities) spent significantly longer time viewing model faces. While the overall average time spent on each ad did not differ, African American consumers, women, and individuals with a higher fashion involvement are more likely to report being able to recall seeing the ads and had a higher intention to purchase the advertised products. The results also supported the idea that brand logos in fashion ads captures consumers' visual attention, which applies to all consumer groups. Future advertisers could focus on selecting representative fashion models (e.g., Caucasian consumers paid more attention to bottom products, while men paid more attention to top products) and include brand logos to improve the effectiveness of the advertisements. Theoretically, this research extends the application of eye-tracking in fashion research and it provides a foundation for future studies in this area.

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