

A Study of Attention Bias in Body Image Perception within the Context of Clothing Industry

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Abstract:

In contemporary society, body anxiety is a prevalent and multifaceted psychological distress affecting individuals of all ages. The gaze of both same-sex and opposite-sex individuals can contribute to heightened body anxiety. Body anxiety is not merely a personal concern but also a collective societal issue. This study investigates people's attention bias towards different body shapes, employing small and plus-size models as stimuli. Participants were presented with images of plus-size and small-size models wearing identical clothing. Both female and male models were included in the stimuli. Participants' gaze patterns were recorded using an eye-tracking device, yielding quantified attention-related gaze results. Statistical analyses revealed that participants exhibited a higher level of attention towards small-size models, as evidenced by significantly longer fixation durations and higher fixation counts. Subsequent gender-based analyses demonstrated that female and male participants spent more time viewing small female models than male models. This finding suggests that participants placed a greater emphasis on female body figures and exhibited a preference for slim figures. At the same time, a greater tolerance towards male body figures was demonstrated. These results provide valuable insights into attention bias in body figures and gender differences.

Keywords: body anxiety, gender, clothing, body shape, eye-tracking, aesthetic, attention

1. Introduction

Body figure anxiety has long been a prevailing social concern, especially among females. An illustrative case in recent years is the shrinking size of female clothing, exemplified by the fashion brand Brandy Melville (BM). BM has championed the aesthetic ideal of a "paper-thin figure," suggesting that only females with the slimmest of physiques can fit into their clothing (Xia, 2021). The Baidu Index reveals a significant surge in searches related to "BM" since 2020. Platforms like Xiaohongshu have seen over 500,000 articles about BM, encompassing discussions on emulating BM-style fashion, recommending stores selling BM-inspired clothing, and detailing shopping experiences at BM outlets (Fan, 2021). Many young women take pride in donning BM attire and identifying as "BM girls." However, this trend has triggered body image anxiety among girls, driving some to extreme weight loss measures resulting in depression and anorexia.

In a materialistic society, the human body has transformed an individual identity to a commodity, effectively becoming a form of capital (Brian, 2000; Baudrillard, 2008). In a socio-aesthetic culture that associates personal worth with physical appearance, slimness symbolizes self-assurance, self-discipline, and success. At the same time, overweight individuals are often stigmatized as having low self-esteem, laziness, and a lack of achievement.

Consequently, the body occupies a prominent place within the societal evaluation framework, and excessive attention to it fosters body image anxiety. Mass media, with its capacity for amplification, plays a substantial role in perpetuating this anxiety (Tang, 2023).

Vygotsky's socio-cultural theory posits that cultural forces readily influence and assimilate individual values and social norms. In this context, mass media influences individuals' body aspirations by disseminating information, propagating implicit psychological effects, and imposing aesthetic norms that present an "ideal" body standard. People exposed to such media messages often adopt these standards, motivating them to pursue these ideals (Zhu, 2013; Chen, 2022). Influenced by consumerism and news media, people come to equate thinness with beauty. Consequently, they subject themselves to these ideals, judge others by the same criteria, and propagate their body image anxiety to those around them. Numerous previous studies have examined the repercussions of body image anxiety. Rooted in broader societal and cultural norms, women aspire to attain slim figures, while men seek muscular physiques. These aspirations can result in body image anxiety, social phobias, and even depression (Waghachavare et al., 2014; Barnes et al., 2020). Moreover, research has shown that peer pressure, parental influence, and social media play pivotal roles in the development of body image anxiety (De Vries et al., 2019; Spettigue et al., 2004).

This study delves into the current situation of people's attention bias in body figures in clothing advertisements. An innovative approach utilizes eye-tracking technology to capture precise and quantitative data on participants' eye movements perusing these advertisements. Furthermore, while prior research predominantly focused on female body image anxiety (Yin, 2022; Liu, 2021; Shao, 2021), recent studies have recognized a shift in women's self-perception from passive subjects of the male gaze to active observers of men (Han, 2017; Liu, 2016; Lu, 2014). Building upon this evolving perspective, this study assesses current body image perception experienced by both females and males. Stimuli include small-size and plus-size models featuring both female and male subjects. Participants viewing processes of clothing advertisements featuring these diverse models are tracked using an eye-tracker, providing updated and quantitative insights into body image perception.

2. Method

2.1 Participants

22 participants ($M=20.04$, $SD=4.41$) were recruited for this study, with an equal distribution of 11 males and 11 females. These participants were randomly assigned to two groups, Group A and Group B, ensuring a balanced gender ratio in each group. All participants provided informed consent before taking part in the experiment.

2.2 Stimuli

The experiment involved presenting participants in both groups with different stimuli. In Group A, participants viewed four distinct clothing advertisements featuring small-size models. Conversely, Group B participants were exposed to four posters showcasing plus-size models. The elements within these advertisements, such as clothing items and backgrounds, were kept nearly identical, except for the models' body shapes. Each poster featured one model, with two female and two male models among the stimuli.

2.3 Design and Procedure

This study employed a between-subjects design, dividing participants into groups (Group A and Group B), each maintaining a balanced representation of both genders. Before commencing the experiment, participants had to sign an agreement outlining the study's details and potential risks. Subsequently, participants were instructed to sit upright in front of a computer screen connected to an eye-tracking device (Tobii 4C). To ensure data accuracy, all participants completed a nine-point calibration procedure before the start of the experiment. The experiment sequentially displayed four posters

to participants, each for 20 seconds. Throughout this process, the eye tracker recorded participants' gaze data. In both Group A and Group B, the model within each advertisement was defined as the Area of Interest (AOI). Eye-tracking parameters, including Total Fixation Duration (TFD) and Fixation Count (FC), were employed to analyze participants' visual attention during stimulus viewing. These data were subjected to statistical analysis for further investigation and discussion.

2.4 Data Analysis

This study utilized two key eye-tracking parameters, Total Fixation Duration (TFD) and Fixation Count (FC), to assess participants' gaze behavior. T-test analyses were conducted to compare gaze patterns on each AOI (model) between Group A and Group B. Additionally, gender-based T-test analyses were performed to explore potential differences in gaze behavior among participants and models.

3. Results

The results are presented in Tables 1 and 2, where Female P represents female participants, Female M signifies female models, and the same notation applies to Male P and M.

3.1 T-Test Analyses of TFD and FC for All Participants

The between-group T-test revealed that the Total Fixation Duration (TFD) in Group A ($M=4.88$, $SD=2.37$) was significantly higher ($t=1.73$, $p<0.05$) than in Group B ($M=3.08$, $SD=1.46$). However, there was no significant difference in Fixation Count (FC) between Group A ($M=10.83$, $SD=4.38$) and Group B ($M=9.98$, $SD=4.29$) ($t=1.73$, $p>0.05$).

3.2 T-Test Analyses of TFD and FC for Male Models

For male participants, there were no significant differences in both TFD ($t=1.86$, $p>0.05$) and FC ($t=1.89$, $p>0.05$) when viewing male models between Group A (TFD: $M=5.66$, $SD=2.84$; FC: $M=11.33$, $SD=4.06$) and Group B (TFD: $M=3.62$, $SD=1.51$; FC: $M=13.4$, $SD=6.39$). For female participants, there were no significant differences in both TFD ($t=1.94$, $p>0.05$) and FC ($t=1.83$, $p>0.05$) when viewing male models between Group A (TFD: $M=3.31$, $SD=1.35$; FC: $M=10.75$, $SD=4.93$) and Group B (TFD: $M=3.44$, $SD=2.23$; FC: $M=9.00$, $SD=3.05$).

3.3 T-Test Analysis of TFD and FC for Female Models

The T-test results indicated that the Total Fixation Duration (TFD) of male participants when viewing female

models in Group A (M=5.91, SD=3.35) was significantly higher ($t=1.86, p<0.05$) than in Group B (M=2.67, SD=1.78). However, there was no significant difference in Fixation Count (FC) between Group A (M=7.83, SD=3.40) and Group B (M=9.00, SD=4.65) ($t=1.89, p>0.05$). Female participants, on the other hand, exhibited

significantly higher TFD ($t=1.86, p<0.05$) and FC ($t=1.86, p<0.05$) when viewing female models in Group A (TFD: M=4.66, SD=1.79; FC: M=13.42, SD=5.69) compared to Group B (TFD: M=2.59, SD=0.97; FC: M=8.50, SD=3.18).

Table1: The Results of TFD and FC

	TFD (s)			FC		
	All	Male P	Female P	All	Male P	Female P
Group A	4.88	5.78	3.99	10.83	9.58	12.08
Group B	3.08	3.15	3.02	9.97	11.20	8.75

Table2: The Results of TFD and FC for Male and Female Models

		TFD (s)		FC	
		Male P	Female P	Male P	Female P
Group A	Male M	3.66	3.31	11.33	11.75
	Female M	5.91	4.66	7.83	13.42
Group B	Male M	3.62	3.44	13.40	9.00
	Female M	2.67	2.59	9.00	8.50

4. Discussion

This study explores the contemporary attention bias of body shape perception by employing small-size and plus-size models as stimuli in clothing advertisements. This investigation seeks to understand how individuals perceive advertisements featuring diverse body types and the implications for their attitudes toward body image. The study utilizes eye-tracking technology to objectively and quantifiably record participants' viewing behavior, focusing on eye-tracking metrics such as Total Fixation Duration (TFD) and Fixation Count (FC).

The T-test results illuminate a significant divergence in participants' attention patterns when presented with small-size models instead of their plus-size counterparts in advertisements. Participants displayed a notably higher TFD, indicating greater attention directed towards small-size models. Subsequent gender-specific analyses provide further insights. There was no discernible difference in TFD and FC between small-size and plus-size models when examining male models. This pattern persisted across both female and male participants. However, a significant shift in gaze behavior was evident when participants viewed advertisements featuring female models. In this context, both female and male participants preferred small-size models, manifesting as increased

TFD and FC. These findings suggest that individuals tend to focus more on female body image and exhibit a preference for slimmer figures.

The observed preference for small-size models is consistent with current industry norms. The fashion industry predominantly showcases small or ultra-small-size models, driven by the prevailing aesthetic ideal that associates "thinness" with beauty. This perception has led to the belief that small-size models enhance clothing presentation, diverting attention from potential design or fabric imperfections (Eonyou Shin, Fatma Baytar;2014). Consequently, society has grown accustomed to and accepting of slender models as the epitome of the ideal body image.

Notably, participants exhibited minimal interest in the body shapes of male models, regardless of whether they were small-size or plus-size models. However, when participants viewed advertisements featuring female models, female and male participants displayed a marked preference for small-size models, underscoring societal leniency toward male body shapes compared to stringent standards imposed on female body shapes. Contemporary research posits that the concept of "thinness equals beauty" arises from the convergence of consumer culture and mass media, designed to regulate women's bodies and internalize these standards through the male

gaze and consumer culture (An, 2021; Shi, 2016; Wang, 2013). Social media platforms, in particular, promote and subtly guide women's ideals of body shape, influencing consumer behavior (Tao, 2020).

Adopting a social constructivist perspective emphasizes the pivotal role of socio-cultural factors in shaping human cognitive development (Zhu, 2013). Cultural values significantly influence individuals' self-perception and their perception of others, imprinting cognitive processes and behaviors (Wang, 2018; Zhang, 2011). The media's consistent promotion of the "thinness" ideal becomes deeply ingrained in individuals' value systems, exerting influence over their psychology and behavior (Strahan & Wilson, 2006). Social culture demands women to maintain a flawless physique and a beautiful appearance, with no such pressure extended to men. Consequently, men and women adhere to the cultural expectation that "women must rigorously maintain their physique, whereas men need not be as concerned with their bodies." This societal dynamic is evident in individuals' attitudes toward female bodies and their relative tolerance for male bodies. While some efforts have been made to address this issue, including incorporating plus-size models by certain brands, the proportion of these models remains disproportionately low. The fashion industry predominantly features slender small-size models, including plus-size models often appearing more as a response to criticisms of promoting distorted aesthetics than as a genuine shift in industry standards. This observation mirrors the findings of this study.

Future research avenues offer opportunities for exploration. Although this study focused on Chinese participants, attitudes toward body image may differ among individuals from diverse countries and cultural backgrounds. Additionally, distinct age groups and professions may hold varying perspectives, warranting further investigation.

5. Conclusion

This research investigated the public's attitudes toward body shapes by employing small-size and plus-size models as stimuli in clothing advertisements. The responses to these advertisements serve as a reflection of society's stance on this issue. An eye-tracking device was employed throughout the experiment to acquire objective and quantifiable data. The findings from the eye-tracking data underscore a clear trend: individuals demonstrate a heightened interest in small-size models of females when contrasted with their plus-size counterparts. Importantly, this inclination holds across both female and male participants, signifying a pronounced gender disparity.

Intriguingly, no statistically significant difference in participants' attention between small-size and plus-size models emerges in the case of male models. These results highlight a persistent societal fixation on female body image, underlining a prevailing preference for slender physiques. Concurrently, this level of scrutiny and aesthetic stereotype does not extend to males. It underscores the enduring confinement and expectations placed upon females concerning their appearance. This study serves as a call to action, emphasizing the need for concerted efforts to challenge and reshape these deeply entrenched societal norms and attitudes.

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