

The Impact of External Information on People's Aesthetic Attention

Ao Jiani

Nansha College Preparatory Academy, Guangzhou, China, 511458

Abstract: *This study aims at investigating if receiving different kinds of external information could make impacts on people's aesthetic experience. Thirty participants were randomly recruited from an office building in Guangzhou, China. Participants were assigned to three groups respectively. Each group viewed images of two females with different features after reading different kinds of articles. During the experiment, an eye tracker was used to record participants' visual data which reflects their corresponding aesthetic attention. The experiment reveals that the current mainstream aesthetic preferences for Chinese females are "fair" skin tone and "slim" body shape. Meanwhile, after reading Article promoting different views, participants' visual attention distribution on one of the females as a stimulus significantly changed. Therefore it can be concluded that external information has an impact on people's aesthetic experience.*

Keywords: *eye tracking, aesthetic attention, external information, priming effect*

1. Introduction

Aesthetics is an essential activity for human society. The desire to pursue beauty has existed for thousands of years. In primitive society, people started to do aesthetic activities like painting, sculpturing, pottery- and decoration-making^{[1][2][3]}. It's been widely discussed what factors could shape people's aesthetic preferences. Some researchers explained that culture is an important factor that shapes people's perception of attractiveness^[4]. Apart from culture, the perception of beauty could also shift in response to economic status. According to a study of Americans, more men voted for women who were younger, shorter, and lighter in good times than they did in recessions^[5]. Furthermore, social media also significantly influences people's perceptions of beauty. Before the internet revolution, Fijians preferred muscular bodies, so they encouraged each other to eat abundantly. Along with globalization, Fijians were exposed to information brought by Euro-American media, which portrayed thin women as the ideal image in the 1900s. Body dissatisfaction, hash dieting, and other undesirable weight-loss activities surged afterward^[6].

Though the formation of aesthetic preferences is complicated, above studies show that various types of external factors potentially play important roles. Any information people get from external sources could be called external information (e.g., news, advertisement, books, images, movies, songs, and conversations). This research focuses on investigating if receiving different external information could make impacts on people's aesthetic attention, which is a part of people's aesthetic experience^{[7][8]}. Aesthetic attention reflects the stimuli's aesthetic attractiveness to people. Moreover, an eye tracker was used in this study to record participants' visual attention during the experiment. This provides a new angle for aesthetic studies which could generate more quantitative results.

2. Method

2.1. Participants

30 Participants were randomly recruited from an office building in Guangzhou, China, including 19 females and 11 males, ranging from 20 to 40 years old ($M=28.76$, $SD=4.55$). A between-subject design was adopted in this study. Participants were divided into three groups, hereafter referred as Group 1, Group 2, and Group 3.

2.2. Materials

There are three groups of materials designed for three groups in this study. Each group consisted of two articles and two images. Following materials are used in this study: Interfering Article A, Interfering Article B, Target Article A, Target Article B, Interfering Image, and Target Image. Interfering Article A, Interfering Article B, and Interfering Image contained irrelevant information to this study, aiming to avoid exposing the research purpose beforehand. Target Article A showed appreciation for females with “slim” body shape and “fair” skin tone. Target Article B focused on promoting healthy lifestyles, including sports and balanced diets. Target Image contained photos of two young females of a similar age. The features of Female A’s appearance are “slim” body shape and “fair” skin tone. Female B’s features are “fit” body shape and slightly “tanned” skin tone, which are different from Female A. Group 1 was a control group, and Group 2 and 3 were experimental groups. Group 1 consisted of Interfering Article A, Interfering Article B, Interfering Image, and Target Image. Group 2 contained Interfering New A, Target Article A, Interfering Image, and Target Image. Group 3 had Interfering Article A, Target Article B, Interfering Image, and Target Image.

2.3 Stimuli

Areas of Interest (AOI) have been selected from Target Image. There are 6 AOIs in total. Female A: Whole (including the face and body), Face, Body; Female B: Whole (including the face and body), Face, Body. Statistical analysis of AOIs would be carried out to identified if there are statistical significance among AOIs.

2.4. Design and procedure

This experiment explores the impact of external information on people’s visual aesthetic attention. A between-subject design is adopted. Each participant was randomly assigned to one of the three groups. To avoid bias, the purpose of this study was not fully informed until participants finished the eye-tracking experiment. Participants first viewed and signed the consent form and filled out the personal information questions. Then participants were led to sit in front of a laptop connected to an eye tracker (Tobii 4C). The experiment started after a successful 9-point calibration. Participants were required to stare at the screen during the whole experiment. Experimental materials were displayed on the screen and played automatically in sequence. Two articles appeared first. Interfering Image followed. And Target Image was the last one. Each Article appeared for 30 seconds, and each image appeared for 7 seconds. The entire process took 5 to 7 minutes per participant. After completing the experiment, each participant was given a desert as a gift.

2.5. Data analysis

In order to measure participants’ visual aesthetic attention, two indicators are chosen: first fixation duration (FFD) and total fixation duration (TFD). FFD reveals people’s subconscious attention at first sight. TFD suggests people’s attention during the whole aesthetic appreciation process. Independent within-group T-tests of FFD and TFD were carried out for each group between Female A Whole and Female B Whole, which compared participants’ attention to two female stimuli. Meanwhile, independent T-tests of FFD and TFD between Female A (Face/Body) and Female B (Face/Body) were also conducted for all three groups, which evaluated participants’ attention distribution over each female stimulus after reading different types of articles.

3. Results

All results are shown in Table 1. In Group 1, the control group, FFD of Female A Whole ($M=0.25$, $SD=0.20$) is significantly ($p=0.01<0.05$) longer than that of Female B Whole ($M=0.15$, $SD=0.09$). In Group 2, there is no significant ($p=0.15>0.05$) difference of FFD between Female A Whole ($M=0.25$, $SD=0.20$) and Female B Whole ($M=0.18$, $SD=0.14$). In Group 3, no significant ($p=0.16>0.05$) difference is found in FFD between Female A Whole ($M=0.18$, $SD=0.12$) and Female B Whole ($M=0.19$, $SD=0.07$).

FFD of Female A (Face/Body) ($M=3.37$, $SD=3.83$) and Female B (Face/Body) ($M=1.83$, $SD=1.34$) in Group 1 do not differ significantly ($p=0.06>0.05$). In Group 2, FFD of Female A (Face/Body) ($M=1.72$, $SD=1.48$) and of Female B (Face/Body) ($M=1.98$, $SD=1.89$) do not have significant difference ($p=0.86>0.05$). However, in Group 3, FFD of Female A (Face/Body) ($M=1.49$, $SD=1.76$) is

significantly ($p=0.02<0.05$) higher than that of Female B (Face/Body) ($M=0.63$, $SD=0.399$).

The rest TFD analyses don't show statistical significance and the results are listed in Table 2. In Group 1, TFD of Female A Whole ($M_1=2.86$, $SD_1=0.80$) is not significantly different ($t=-2.09$, $p>0.05$) from Female B Whole ($M_1=2.15$, $SD_1=0.69$). In Group 2 TFD of Female A Whole ($M_2=2.19$, $SD_2=1.49$) is not significantly different ($t=-0.06$, $p>0.05$) from Female B Whole ($M_2=2.16$, $SD_2=0.74$). There is neither no significant difference ($t=-2.09$, $p>0.05$) between TFD of Female A Whole ($M_3=2.42$, $SD_3=0.74$) and Female B Whole ($M_3=2.41$, $SD_3=0.72$) in Group 3. At the same time, TFD in Group 1 of Female A (Face/Body) ($M_1=1.34$, $SD_1=1.81$) is not significantly different ($t=-2.75$, $p>0.05$) from Female B (Face/Body) ($M_1=1.13$, $SD_1=1.71$). In Group 2, there is no significant difference ($t=-0.80$, $p>0.05$) between Female A (Face/Body) ($M_2=1.45$, $SD_2=2.08$) and Female B (Face/Body) ($M_2=0.90$, $SD_2=0.65$). In Group 3, Female A (Face/Body) ($M_3=1.15$, $SD_3=0.93$) and Female B (Face/Body) ($M_3=0.69$, $SD_3=0.45$) also don't have significant difference ($t=-1.40$, $p>0.05$).

Table 1: FFD of all AOIs.

Group	Female A Whole	Female B Whole	Female A (face/body)	Female B (face/body)
Group 1	0.253	0.148	3.368	1.827
Group 2	0.253	0.175	1.72	1.976
Group 3	0.177	0.186	1.49	0.63

Table 2: TFD of all AOIs.

Group	Female A Whole	Female B Whole	Female A (face/body)	Female B (face/body)
Group 1	2.855	2.152	1.344	1.1276
Group 2	2.194	2.161	1.45	0.8969
Group 3	2.417	2.413	1.1536	0.6947

4. Discussion

This is one of the earliest experiments leveraging eye-tracking technology to look at the influences of external information on people's aesthetic attention. This research reveals several meaningful results. Firstly, it suggests that the current mainstream Chinese aesthetic preference for females is a "fair" skin tone and a "slim" body shape. This is supported by a significantly longer FFD of Female A compared to that of Female B. This indicated that Female A with a "fair" skin tone and a "slim" figure is more attractive to participants subconsciously. Secondly, external information could steer peoples' aesthetic attention. Target Article A advocates for a "slim" figure and a "fair" skin tone. Target New B, which promotes a healthy lifestyle, counteracts the mainstream preferences and encourages "fit" and "tanned" preferences instead. Though, FFD of Group 2 and 3 between Female A Whole and Female B Whole don't have a significant difference, in Group 3, FFD of Female A (Face/Body) is significantly higher than that of Female B (Face/Body). This indicates that participants' visual attention distribution changed after reading Target Article B; they tended to pay more attention to Female B's body instead of her face, which is fit and tanned. "Fit" and "tanned" factors became more attractive. At the same time, TFD of Female A (Face/Body) and Female B (Face/Body) in Group 3 do not differ significantly, which suggests the interference effect could not last long.

The potential explanations for the effects of external information on aesthetic preferences are discussed below. Implicit memories refer to alterations in behaviors caused by earlier experiences. External information may create implicit memories since it can occur irrespective of any conscious or explicit remembrance of a previous experience with stimuli^[9]. At the same time, implicit memories can be closely related to the process of aesthetic experience. According to Leder, aesthetic experience includes 5 processing stages: (1) Perceptual analysis; (2) Implicit memory integration; (3) Explicit classification; (4) Cognitive mastering; (5) Evaluation^[10]. Implicit memory takes place in the second step in aesthetic process. This is why receiving external information may steer people's aesthetic preferences.

Social culture could be a significant source of external information. This helps explain the formation of "fair" and "slim" aesthetic preferences for females in China. Confucianism was the fundamental value for many dynasties in ancient China, which considered being a wife and giving birth to sons as two main functional roles for women^[11]. That put women in a much lower social status than men in ancient China and lasted for thousands of years^[12]. Women were required to be dependent and obedient, and were excluded from social work and roles of authority. Women could only stay at home for most of the time.

“Staying at home” led women into “fair” skin tone and “obedient” shaped women into “slim” body shape. One example is a famous empress in ancient Han dynasty (200 B.C. – AD. 219) Feiyan. She is considered as one of the four most beautiful women in ancient China. Feiyan is famous for her petite weight. It’s said she could even dance on one’s palm^[13]. This research reveals that the effect of “fair” and “slim” aesthetic judgment on women lasts until today in China, which is also reflected in other studies^[6]. Not only in China, similar aesthetic reviews of women appear in many countries across the globe. Frederick’s research showed that slender women were considered more attractive than overweight women in every industrialized society studied. Especially in South Korea, they pursued the most extreme level of thinness^[6]. Meanwhile, as noted by Swami, particular non-western cultures may share the same aesthetic ideology as western cultures^[14]. These researches indicate many countries share similar beauty standards especially “slim” body shape. However, this aesthetic norm may lead to serious health issues for females (e.g., calcium deficiency, malnourished, and even mental problems)^[15].

There are some limitations in this research. Participants were exposed to comparatively short duration and limited amount of target information. In future research, longer exposing duration and a bigger amount of information could be adopted. If participants are exposed to more target information, more significant impact might be generated. As familiarity influences aesthetic choice^[16]. Meanwhile, more participants could be recruited to generate a more comprehensive and representative result.

5. Conclusions

Above all, this study demonstrates that external information could affect people’s aesthetic attention. Though information promoting healthy lifestyles didn’t transform participants’ aesthetic attention thoroughly, participants’ attention distribution did shift comparing to the other two groups. If participants were to be exposed to similar information for a longer time, there might be more significant impacts. Nowadays, people are exposed to a dramatically increasing amount of external information brought by booming social media. Not only traditional media, but also every single person could voice out via social media. It’s important to leverage social media to advocate for healthy aesthetic preferences so that people, particularly females, can be released from current aesthetic stereotypes.

References

- [1] Wang Ya. (2006). *An Analysis of Mural Art in Primitive Society*. *Journal of Shaoguan University*, 27 (2), 95-97.
- [2] Fu Zhiyi. (2002). *A Preliminary Probe into the Secular Aesthetics of African Prehistoric Rock Paintings*. *Journal of Southwest University for Nationalities: Philosophy and Social Sciences*, 23 (4), 154-156.
- [3] Zou Shuhui. (2022). *The Aesthetic Consciousness of Primitive Society: An Analysis of Primitive Creation*. *Ceramics*, (5), 64-66.
- [4] Weir, D. J. (2006). *Timing the market: How to profit in the stock market using the yield curve, technical analysis, and cultural indicators*. Wiley.
- [5] Swami, V., Caprario, C., Tovée, M. J., & Furnham, A. (2006). *Female physical attractiveness in Britain and Japan: A cross-cultural study*. *European Journal of Personality*, 20(1), 69–81.
- [6] Frederick, D., Forbes, M., Jenkins, B., Reynolds, T., & Walters, T. (2015). *Beauty standards*. *The International Encyclopedia of Human Sexuality*, 113–196.
- [7] Kirsch, L. P., Urgesi, C., & Cross, E. S. (2016). *Shaping and reshaping the aesthetic brain: Emerging perspectives on the Neurobiology of Embodied Aesthetics*. *Neuroscience & Biobehavioral Reviews*, 62, 56–68.
- [8] Brattico, P., Brattico, E., & Vuust, P. (2017). *Global sensory qualities and aesthetic experience in music*. *Frontiers in Neuroscience*, 11.
- [9] Schacter, D. L. (1992). *Priming and multiple memory systems: Perceptual Mechanisms of implicit memory*. *Journal of Cognitive Neuroscience*, 4(3), 244–256.
- [10] Leder, H., Belke, B., Oeberst, A., & Augustin, D. (2004). *A model of aesthetic appreciation and aesthetic judgments*. *British Journal of Psychology*, 95(4), 489–508.
- [11] Rosenlee, L.-H. L. (2007). *Confucianism and women: A philosophical interpretation*. SUNY.
- [12] Rainey, L. D. (2010). *Confucius and Confucianism: The essentials*. John Wiley & Sons, Ltd.
- [13] Sekayi, D. (2003). *Aesthetic resistance to commercial influences: The impact of the Eurocentric beauty standard on Black college women*. *Journal of Negro Education*, 467-477.
- [14] Jung, J. (2018). *Young women's perceptions of traditional and contemporary female beauty ideals*

in China. Family and Consumer Sciences Research Journal, 47(1), 56–72.

[15] Leung, F., Lam, S., & Sze, S. (2001). Cultural expectations of thinness in Chinese women. *Eating Disorders, 9(4), 339–350.*

[16] Kunst-Wilson, W. R., & Zajonc, R. B. (1980). Affective discrimination of stimuli that cannot be recognized. *Science, 207(4430), 557–558.*