

Evaluation of Aesthetic Response to Clothing Color Combination: A Behavioral and Electrophysiological Study

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Abstract

The purpose was to focus on the correlation between color combinations of clothing and aesthetic responses. In this study, four levels of contrasting colors were combined in a two-piece suit as stimuli. Behavioral and electrophysiological data were recorded during the course of aesthetic evaluation. Results showed that the higher the contrast of color, the less attractive the clothing is. The early P200 (P2) components were very remarkable in the frontal, central and parietal areas, and the larger amplitudes were evoked for less attractive color combinations. The late P300 component plays a critical role in the decision-making aesthetic affirmation. The findings in the current research implied that the P2 and P300 can be viewed as the landmark components for aesthetic response of clothing colors.

Keywords: Color Combinations; Color Contrast; Aesthetic Response; Clothing; P2; P300

1 Introduction

As an essential ingredient of fashion [1], color aesthetics is still regarded as a key factor by consumers. Clothing colors, however, are rarely experienced in isolation. Accordingly, the aesthetic experience of which is strongly influenced by its participation in combinations of two or more colors [2]. A number of researchers have reported the effects of color combination. Unfortunately, the finding is often contradictory. Palmer and Schloss conducted a series of behavioral studies, from which they claimed that the aesthetic evaluation of color combinations decreases as the contrast of colors gets higher [3]. Deng and his colleagues examined color combinations in a realistic self-design task of footwear products. The results also revealed some consistent findings. He discovered that people generally like to combine colors that are relatively close or exactly matching [4]. Granger, however, measured color harmony by asking participants to rank

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pair-wise combinations of 20 hues. He found that harmony increased as hue distance increased in this task, suggesting that the combinations were more harmonious when they differed greatly in hue [5].

Classical aesthetic theory holds two opposite perspectives, the subjectivist suggested that aesthetic value lies in the eyes of the beholder; while the objectivist disputed that it exists in the object. Neuroaesthetics perspective, however, has broadened this topic and has already acquired some satisfactory evidences in many actual applications, such as music, painting, webpage, vehicle and so on [6-8]. The brain activity of cerebral areas reflects aesthetic experience, including cognitive processes linking the subcortical areas, the visual-motor regions, and the core emotion centres, and is presumably related to aesthetic appraisal and aesthetic pleasure [9]. Nevertheless, the aesthetic process is very intricate involving a variety of psychological processes, such as recognition, expectation, pleasure, interest, etc. [10]. Extensive researches focused on this topic and supported an aesthetic cognition model [11]. The model contains several consecutive stages. During the earlier stage, an initial impression of aesthetics is formed, which takes place before 300 ms after stimuli onset, mainly when participants consider stimuli to lack aesthetic value. During the later stage, a deeper aesthetic evaluation related to broad hemispheres activity, begins after 300 ms. Notably, in some earlier Event-related Potential (ERP) studies, it was proposed that the visual positive component with a peak latency from 100 ms to 200 ms (P2) was sensitive to the emotionality of stimuli [12, 13]. Tommaso and Pecoraro assessed participants' affective responses to aesthetic stimuli with landscape pictures in a task-irrelevant paradigm and found that beautiful objects elicited a stronger positive emotion before participants made overt judgments [14]. Hong Wang, et al. concluded that red car picture statistically tends to explode the excitement of visual nerves than blue car with the distinct P2 components [15].

In fashion research field, the relation between psychological phenomena and physical quantities of colors has been given attention for a long time. Surprisingly, no research addressed how a color combination affects individuals to process aesthetic evaluation by neurophysiological techniques. Present study addressed this topic and focused on the aesthetic evaluation of clothing color using behavioral and neurophysiological methods. The main objectives of the study are: (1) to testify the color combinations influence on behavioral aesthetic evaluation of clothing, and (2) to get an insight into the brain cognitive activities elicited by the different degrees of color combinations during the aesthetic judgments of clothing.

2 Methodology

We conducted two experiments to measure the aesthetic responses of clothing color combinations. In experiment 1, we investigated and testified the relation between color combinations and aesthetic evaluation by behavioral measures, the results from which would also be used as a basis of the electrophysiological study. In experiment 2, we further explored the aesthetic evaluation by the electrophysiological measures aiming at the beautiful combinations and less beautiful combinations from the data of behavioral experiment. In this experiment, a stimuli-response paradigm was used. We assumed that emotional processes would be activated spontaneously by objective aesthetic value at the early stage of aesthetic experience, and predicted that the beautiful combinations would spontaneously arouse more positive emotion, resulting in lower amplitude of P2 and P300, as compared with less beautiful ones.