Red for Romance, Blue for Memory

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Abstract. Decades of psychological research have shown that the color could affect human's emotion and perception. However, the influence of this effect on human performance is still unknown. This study was performed to investigate and reveal the effect of the color red, blue and gray on memory through a word recognition task. When the presented video clip featured a red background, the model's attractiveness was rated statistically higher than the other condition. The blue condition video viewers and their resulting performance on the word recognition task were better than the performances of the other color condition groups. This research implicates that a specific color has an effect on human perception and memory.

Keywords: red, color, memory, attractiveness.

1 Introduction

When a consumer purchases a product, he or she makes a decision depending on the first impression of a product. The relevant image of product is a critical criterion for purchase. (Edell, Burke, 1987; Bloch, 1995). Perceived product attractiveness can enhance 'intent to use', and its effect on 'pleasure', 'learnability' and 'utility'(Van der Heijden, 2003; Lavie & Tractinsky, 2004; Hassenzhal, 2004). It is important to verify what circumstances the color stimulus was exposed in. The color red can be interpreted as a warning for danger, provocation to an enemy, or failure itself depending on temporal and spatial situations. Also, cultural background can effect color perception. Historically, red was regarded a symbol of femininity (Knight, Powers & Watts, 1995).

In recent empirical work, Elliot (2008) demonstrated the influence of the color red not only on perceived attractiveness and sexual desire, but also on one's intention for dating, and willingness to pay on dates which are higher cognitive behaviors. In our previous research, we hypothesized that when a male user is asked to rate the attractiveness of a female model, the ratings will differ depending on the background color of the video file (Jung, Kim & Han, 2011). Additionally we have proved that when the presented video clip featured a red background, the model's attractiveness was rated statistically higher than when the background was blue.

In many of these previous studies, the color red made females more attractive to males. However, the influence of this effect on human performance is still unknown.

It is common to watch TV or learn something from a female host. Therefore we can extend our research question from perceived attractiveness to human performance.

2   Experiment

This study was performed to investigate and reveal the effect of the color red on memory through a word recognition task. In contrast to our previous research (Jung, Kim & Han, 2011) in which all of the participants were male to measure perceived attractiveness of a woman in a red context; we recruited both male and female participants this time.

Moreover, we altered the female model's clothing to make this experiment appear more natural. In this experiment, a female model wears three differently colored t-shirts as participants read a word set. Participants complete a word recognition task after watching the prepared video clip. We measured a difference in the recall rates between the color groups.

Participants. Thirty six undergraduate students took part in this study for course credit. (Male: 16, Female: 20) They were recruited through the advertisement of the institutional official internet site at Yonsei University.

Materials. IBM Pentium4 PC and a 17 inch 60Hz LCD monitor with 1280 x 1024 resolution were used for the experiment system. The experiment software was developed by MS Visual Basic 6.0. The selected words for this task were chosen by a word of high frequency list from the "Survey of Modern Korean word usage." by the 'National Institute of the Korean language'. According to this survey we picked 200, two-syllable nouns, which and have frequencies between 200 and 1100 according to the aforementioned standard.

Stimulus. This video was recorded using a digital camcorder (CANON VIXIA HF10). The female model wore plain red, blue and gray short sleeve colored T-shirts. (UNIQLO brand) The background color was white while the waist-up was shown in the shot. The selected word was spoken 1,000ms per average and interval was also 1,000ms. A subtitle was also presented in white letters at the middle and bottom of the video screen during the female model's word recital.

Procedures. Participants watched the differently colored video clips which each contained a 10 word set one time and the sequence of the video presentation followed the "Latin Square" randomized design. Following the video clip, the word recognition task began. None of them were aware of the hypotheses being tested. After the three tasks, the participant rated the woman's attractiveness (1 = not attractive, 7 = very attractive). According to the signal detection theory, a hit (recall of the right word emerging former video clip) was calculated by a correct answer, and a false alarm was calculated by incorrect answer.

Fig. 1. The example of video stimulus

3   Results and Discussion

In this study, we focused on red and blue; gray was added for achromatic color condition. We analyzed the collected data through repeated measure analysis. Two participants' data were eliminated due to a false alarm rate significantly exceeding their hit rates.
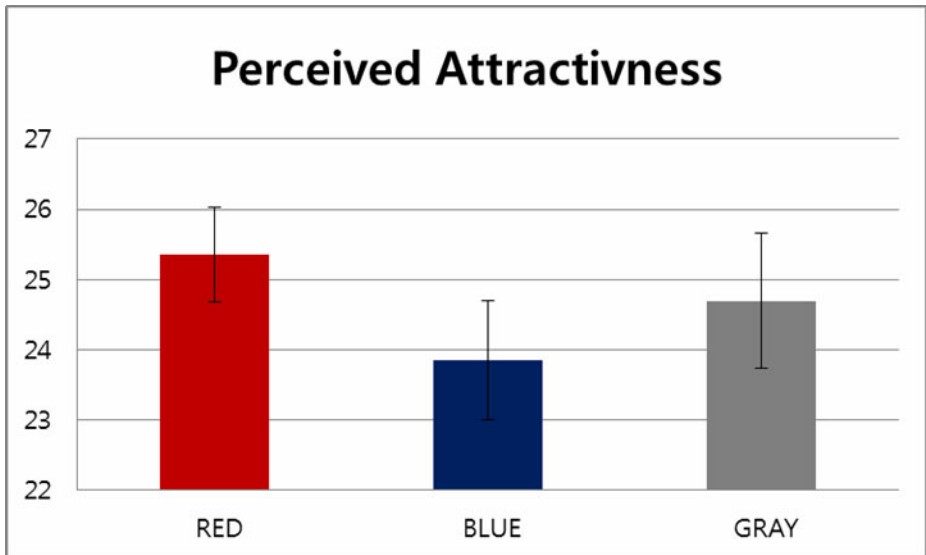

Fig. 2. Perceived attractiveness as a function of clothes' color. (Standard Errors are indicated by vertical lines).

As displayed in Figure 2, a woman in red's attractiveness ($M = 25.36$, $SD = .67$) was higher than blue's ($M = 23.85$, $SD = .84$) condition ($MSe = .574$, $p = .013$), a result that mirrored the conclusion of our previous study.

Word recognition results are shown in figure 3. The blue condition ($M = 19.31$, $SD = 2.03$) video viewers and their resulting performance on the word recognition task was better than the performances of the other color condition groups: in red ($MSe = .666$, $p = .039$) and in gray ($MSe = .897$, $p < .001$). Additionally, the red condition ($M = 18.18$, $SD = 1.70$) has better performance than gray condition ($MSe = .955$, $p = .038$). Unlike previous similar research, our study tried to use video stimulus which more closely represented the real world. These findings indicate that in certain conditions, background color can subconsciously change human perception of a female model and memory performance. In terms of the association between the color red and the attention participants paid to a female model in situations including, but not limited to, the commercial, this research implies that a specific color has an effect on human perception and memory.
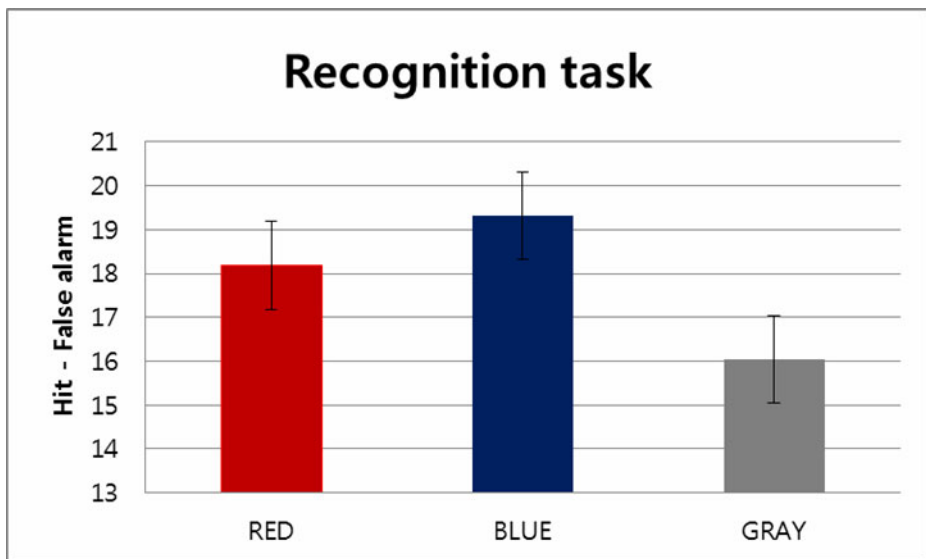

Fig. 3. The result of recognition task. (Standard Errors are indicated by vertical lines).

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