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Influence of Clothing Color Number on Visual Search

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***Abstract*—Color plays a key role in the clothing display and its number also impacts visual search. In the present study, behavioral test was used to determine the response in visual search target judgment for clothing color display, and the purpose is exploring the influences of color number on the visual search. The results show that the number of clothing colors affected on the visual search efficiency, and the more clothing colors, the lower the visual search efficiency.**

Keywords—Color; clothing display; visual search; behavioral

I. INTRODUCTION

We live in a world full of colors, which is a visual effect from eyes, brain and life experience. Clothing display, as an important marketing tool for clothing sales terminals, plays an increasingly important role in creating brand image, promoting products, attracting consumers and promoting purchase intention. Color is one of the key factors involved in clothing display and the combination of colors with different characteristics will achieve diverse visual effects. In the process of consuming behavior, clothing enterprises can introduce products to consumers in more detail through color display, so as to leave a good impression on consumers and promote them to make purchasing decisions.

Visual search refers to the process of finding and identifying the target in a pile of interfering stimuli when the target stimulus is known. In the face of complex information from the outside world, Visual search is an activity in which an individual actively searches for distracting information and finds out what he or she wants from it. Feature search occurs when the subject finds some distinguishing features (such as color, size, direction, etc.) between the search target and the distractor. Search time and accuracy can be used as indicators to judge the efficiency of visual search. Display, as an important marketing method for clothing stores, has been studied by many scholars, while the role of color in clothing display search has not been explored in depth.

As interference factors, color has the importance of fashion display to attract consumers seeking target clothing. In this study, the concept of visual search was introduced into the display of clothing colors. Through behavioral experiment, the effects of the number of clothing colors on the visual search efficiency were explored.

II. EXPERIMENT

A. Equipments and stimuli

The stimulus pictures were presented on a computer with a 14-inch monitor using E-Prime 2.0 (Psychology Software Tools, Inc.) in a dimmed room, the distance between participant and monitor was about 60cm. Pictures were produced with the Photoshop 8.0 procedure. 36 basic colors were selected evenly from the 360° color wheel at the interval of 10°, and all these colors were presented in a white dress. Then those dresses were arranged on display rack with 3, 6 or 9 colors (shown in Fig. 1). All the colors are based on the RGB color mode.

Fig.1 Stimulus picture samples with 3, 6 or 9 clothing colors

B. Participants

64 undergraduate students at Soochow University in China (Aged in 19-27) participated in the experiment, whose majors have nothing to do with clothing. All subjects had normal or corrected-to-normal vision and were unaware of the purpose of experiment.

C. Procedure design

Each trial began with the presentation of a fixed cross in the center of the screen for 100ms. After 400ms, a target color picture was displayed for 400ms on a uniform white background, and then followed by a clothing display picture with 3, 6 or 9 colors which appeared randomly. After that, the participants must judge whether there was a target color in the picture (shown in Fig. 2). Responses were collected via keyboard. The subjects pressed “Z” in keyboard if he thought there is a target color; otherwise, he should press “M” in keyboard. Before the experiment, 10 trial images were provided to get the participants acquainted with the manipulative method and the short display time.

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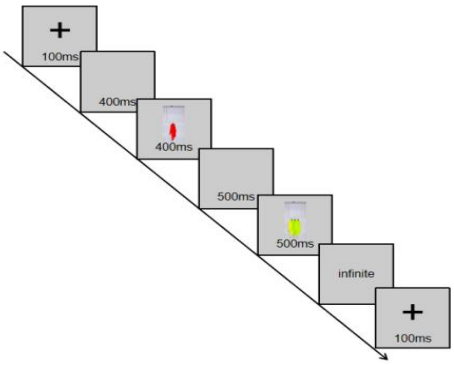

Fig.2 Sequence of stimulus presentation

III. RESULTS AND DISCUSSION

Analysis of the collected data was conducted using a combination of Microsoft Excel and SPSS17.0.

A. Judgment accuracy

Fig. 3 presents the accuracy of the visual search. In general, there is a trend that the accuracy gradually reduces as clothing color number increases, that is, the accuracy of visual search can reach more than 92% if there are 3 clothing colors, while it can only reach 74% when there are 9 clothing colors. The results provided sufficient evidence to the close relationship between the number of clothing color and the accuracy of the visual search.

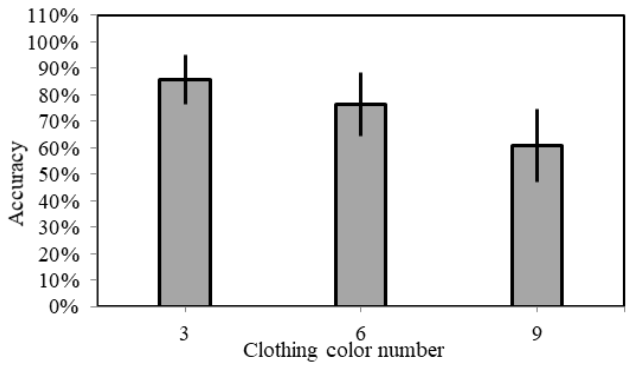

Fig.3 The influence of the clothing color number on the accuracy of the visual search

The data were further submitted to a one-way ANOVA. There was a significant main effect (F= 226.26, p=0.000), indicating that diverse number of clothing color resulted in obvious differences of accuracy of the visual search.

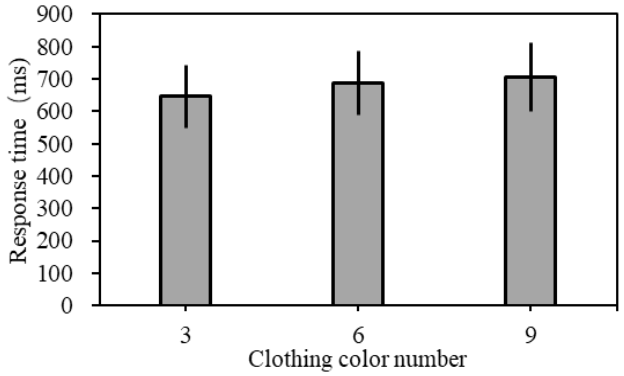

Fig.4 The influence of the clothing color number on the RTs of the visual search

B. The RTs of the visual search

Fig. 4 shows the RTs (response time) required to search for the target colors. Fig. 4 shows that with the increases of clothing color number, the response time was prolonged. The smaller the color number, the shorter the response time, this phenomenon maybe resulted from the fact that the search task become overloaded when the increase in the number of colors. The RTs data were also submitted to a one-way ANOVA, the analysis revealed that there was a significant main effect (F=40.81, p=0.00), suggesting that significant differences of RTs existed among the color numbers to impact on visual search, compared with three clothing colors (M=650.06ms, SEM=11.78ms), nine clothing colors (M =705.32ms, SEM=12.83ms) makes it harder for subjects to search for target colors.

IV. CONCLUSION

Some significant findings have been revealed from the experiments. First, a correlation between clothing color number and visual search is very distinct, the number of clothing colors affected on the visual search efficiency, and the more clothing colors, the lower the visual search efficiency. That is to say, different color number can result in different difficulty in visual search task, the search task become overloaded when the ;increase in the number of colors. Findings from this study can provide a basis for clothing enterprises to design store displays.

REFERENCES

[1] Mu Hong, Lin Qinghua. Optimization of clothing store display based on visual search [J].Journal of Textiles,2015,36(09): 125-128.

[2] Chen Yingying. Visual marketing in a clothing store to consumers Research on the impact of decision-making[D]. Donghua University,2014.

[3] Olivia J, Pamela U. The relationship between color cycles in home furnishings and apparel,1969–2009[J].Fashion and Textile,2018,5(1):12-28.

[4] Duan Lijuan. Research on the application of color marketing in clothing marketing [D]. Jiangnan University,2008.

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[5] Qiao Hui. Research on color display in clothing visual marketing [J]. Science and Technology Entrepreneurship Monthly,2012(9): 56-57.

[6] Kosuke, Motoki, Toshiki, et al. Light colors and comfortable warmth: Cross modal correspondences between thermal sensations and color lightness influence consumer behavior[J]. Food Quality & Preference,2019.

[7] Lee S, Srinivasan V, Rao C. Color and store choice in electronic commerce: The explanatory role of trust[J]. Journal of Electronic Commerce Research,2010,11(2).

[8] Bellizzi J A, Hite R E. Environmental color, consumer feelings, and purchase likelihood[J]. Psychology & Marketing,1992, 9(5):347-363.

[9] Babin B J, Hardesty D M, Suter T A, et al. Color and shopping intentions: The intervening effect of price fairness and perceived affect[J]. Journal of Business Research,2003,56(7):541-551.

[10] Lu Yanjuan. Exploring the application of color power in commodity color marketing [J]. Art Review,2012(6):100-102.

[11] Wang Jie. Experimental design and SPSS application[M]. Chemical Industry Press,2007.

[12] Chen Qingrong, Shan Yanhong, Deng Zhu. E-Prime experimental system and its application in psychology[J]. Laboratory Research and Exploration,2006,25 (12): 1488-1491.

[13] Zhuang X, Papathomas TV. Cue Relevance Effects in Conjunctive Visual Search:Cueing for Location, Color, and Orientation[J].Journal of Vision,2011,11(7).

[14] Michalski R, Grobelny J. The Role of Color Preattentive Processing in Human–Computer Interaction Task Efficiency: A Preliminary Study[J].International Journal of Industrial Ergonomics,2008,38(3-4):321-332.

[15] Michalski, Rafa. The influence of color grouping on users' visual search behavior and preferences[J]. Displays, 2014, 35(4):176-195.

[16] Eckstein M P, Koehler K, Welbourne L E, et al. Humans, But Not Deep Neural Networks, Often Miss Giant Targets in Scenes[J]. Current Biology,2017: S0960982217309727.

[17] Journal of Marketing Practice: Applied Marketing Science, Vol. 5 No. 3, 1999, pp. 78-88. © MCB University Press,1355-2538.

[18] Sliburyte L, Skeryte I. What We Know About Consumers' Color Perception[J].Procedia - Social and Behavioral Sciences,2014, 156:468-472.

[19] Widdel H, Posi D L. Color in electronic displays[M].New York:Plenum Press.l992.