Study on the warm-cool sense of the textile material and color

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ABSTRACT

Owing to the various materials, sizes and shapes of textile materials, visual sensibility may differ depending on the difference in the material of clothes. Above all, visual perception in clothing can be influenced by color. The purpose of this study was to investigate the relationship between the warm-cool sense of textile material and the warm-cool sense of warm tones and cool tones used in personal color. Three kinds of textile materials with different warm-cool senses, and 10 colors of red, pink, yellow, green, and blue were selected as cool and warm colors. As a result of the study, the textile material with higher warm-cool sense felt warmer, and the cooler color and warmer color were perceived as having different warm-cool sense depending on the textile material. However, in the case of blue, it does not feel the emotional perception of warmth, and it can be seen that the warm-cool color sense is inherent to blue regardless of the warm-cool sense of the textile material. Based on the results of this study, it can be concluded that research on the relationship between the warm-cool sense of blue and the textile material with more various warm-cool senses can persist.

KEYWORDS: Textile material, Color, Warm-cool

INTRODUCTION

Because clothing has various materials, sizes and shapes, visual sensibility may differ depending on the difference in the material of clothes. Baik Hyun-joo and Park Yung-kyung (2014) have studied the characteristics of textile materials. In this study, we explored how various physical characteristics such as the color of the object surface and the material of the target surface affect perception when we look at the textile material and how these characteristics are combined with the visual weight. Above all, visual perception in clothing can be influenced by color. However, Lee Jae-jung and Jeong Jae-woo (2004) found that colors projected on textile reveal the image with color alone with difficulty, and that the mood is determined in addition to factors such as material and area.

The purpose of this study is to investigate warm-cool sense among visual perceptions of textile materials used in garments. The warm-cool sense also relates to warm tone (warm color) and cool tone (cool color) distinguished from personal color, which can be considered when choosing the color of clothes. However, the warm tone and the cool tone in personal color are separated only by color, but the warm-cool sense depending on the material of the textile is not considered. Therefore, we will investigate the relation between the warm-cool sense of clothing material and the warm-cool sense of warm tone and cool tone distinguished from personal color.

It is expected that this study will be able to find out how the warm-cool color sense differs according to the textile material because the distinction between the conventional warm tone and the cool tone is already reflected in the warm-cool sense.

EXPERIMENTAL

The warm-cool sense setting for this study is divided into the warm-cool sense for textile material and the warm-cool sense for color. The choice of the warm-cool sense for the textile material was chosen from three different types of textiles (lace, polyester, and velboa) that could have visually significant warm-cool sense differences. Lace was the material with low warm-cool sense, polyester with intermediate warm-cool sense, and velvet the material with high warm-cool sense. The warm-cool sense of the color was measured using the five

colors (red, pink, yellow, green, blue) used in the study by Oh Hee Sun (1999) and Kim Mi-ran and Lee Gyoung-young (2007). 10 colors of red, pink, yellow, green, and blue are selected as cool and warm colors. An example of the sample is shown in Figure 1.

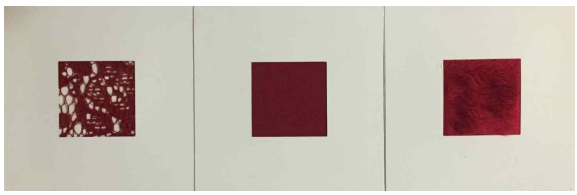

Figure 1: Example sample.

<Figure 1> is a red warm tone color of a lace with a low warm-cool sense from the left, a polyester with a medium warm-cool sense, and a velboa with a high the warm-cool sense. The questionnaire survey was conducted on 15 women aged 20–30, who were educated in color. They selected randomly placed textile materials on a scale of 5 points with 1 point coolness ~ 5 point warmth.

RESULTS AND DISCUSSION

In the analysis of the study, the average value of the warm-cool sense felt by each *textile* material was recorded, and a difference between the warm-cool sense in the material and the warm-cool sense in each color was found.

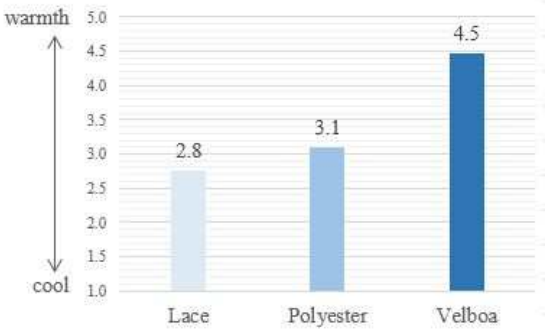

Figure 2: Average response value of the warm-cool sense per textile material.

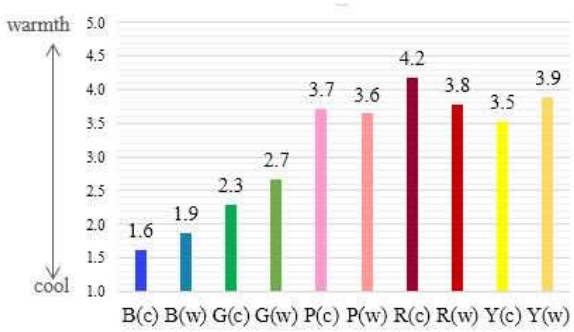

Figure3: Average response value of the warm-cool sense per color.

<Figure 2> shows that there is a difference in the warm-cool sense per textile material. The average response value of the warm-cool sense of the lace was 2.8, and the average response the warm-cool sense of the polyester was 3.1. The warm-cool sense of the velboa was 4.5. In order to examine the warm-cool sense per color (B-Blue, G-Green, P-Pink, R-Red, and Y-Yellow), (c) is a cool color and (w) is a warm color. The mean value of response by color was classified into 3 points, colors below 3 points indicating coolness and above 3 points indicating warmth. <Figure 3> shows that there is a difference in the warm-cool sense per color. The average response value of the blue, green, and blue textile materials is less than 3 points and appears to be cooler. In addition, the warm color of the warm tone was slightly higher than the cool color of cool tone, and the warm color was warmer than the coolness of the cool color. On the other hand, pink and red textile materials have a cooler color. In addition, the average of pink, red, and yellow is 3.5 or more, which means that they are warm regardless of the textile material. Among them, the warmest color is red. Above all, it is worth noting that cool red appears as the warmest color.

Based on this analysis, the warm-cool color sense of each material is as follows:

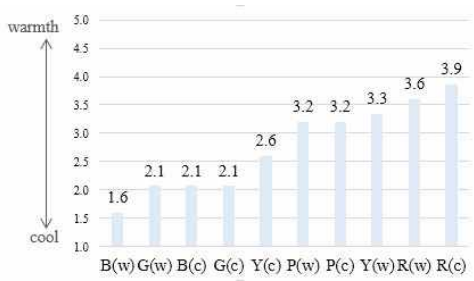

Figure 4: Average response value of color of lace material

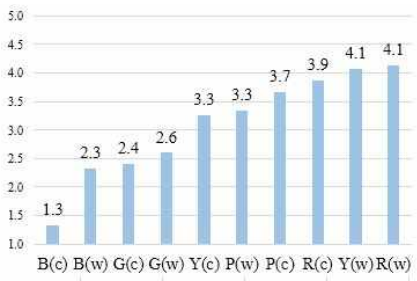

Figure 5: Average response value of color of polyester material

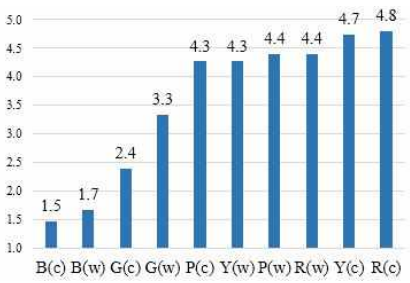

Figure 6: Average response value of color of velboa material

First, the cool color of yellow, which includes the cool and warm color of green and blue through the average response value of the lace material in Figure 4, shows coolness with less than 3 points. Among them, the lowest value color is classified as the warm color of blue in personal color, but when the material is considered together, the warm-cool sense value is evaluated to be the lowest. Likewise, the warm color of green, pink, and red have a lower warm-cool sense than cool colors in personal colors. In the case of a polyester material in Figure 5, the cool color of blue is 1.3 points, which has the lowest warm-cool sense among the three materials. Also, as in Figure 4, blue and green averaged less than 3 points, indicating that they felt cool regardless of the warm-cool color sense. In Figure 6, which shows the average response value of color of velboa, the cool color of red is 4.8 points, and thus, is the warmest. In addition, the cool and warm colors of blue and the cool colors of green appeared to be cooler by less than 3 points. In terms of rankings, blue and green are the lowest in all three textile materials. When we analyze the warm-cool sense of the textile material and the warm-cool color sense, the warm-cool sense according of red, pink, yellow, green, and blue appear unrelated to the warm-cool sense of the warm and cool tones. It can also be seen that the warm-cool color sense differs depending on the material.

CONCLUSION

The purpose of this study is to investigate how the warm-cool color sense varies depending on textile materials with different warm-cool sense by dividing textile material and color into the warm-cool sense of visual perception.

The results of the study are as follows: the warm-cool color sense differed depending on textile material. In lace, the warm color of blue had the lowest warm-cool sense. In velboa, the cool color of red had the highest warm-cool sense.

Table 1. Change in average value of color by textile material

	B(c)	B(w)	G(c)	G(w)	Y(c)	Y(w)	P(c)	P(w)	R(c)	R(w)
Lace	2.1	1.6	2.1	2.1	2.6	3.3	3.2	3.2	3.9	3.6
Polyester	1.3	2.3	2.4	2.6	3.3	4.1	3.7	3.3	3.9	4.1
Velboa	1.5	1.7	2.4	3.3	4.7	4.3	4.3	4.4	4.8	4.4

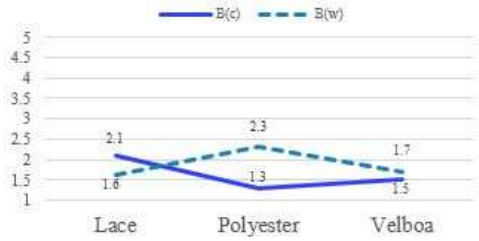

Figure 7: Change in the warm-cool sense of blue color by textile material

As shown in Table 1, the higher the warm-cool sense of the material, the higher the warmth. However, in the case of blue, it can be seen that the warm-cool sense value is independent of the textile material, as shown in <Figure 7>. As a result, it can be seen that blue does not feel the emotional perception of warmth, and has a unique warm-cool color sense regardless of the warm-cool sense of the textile material.

Based on the results of this study, it can be concluded that there is no relation between the warm-cool sense of blue and its relationship with textile material.

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