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Elementary Students' Clothing Color Preferences and the Colors of Clothes Worn at School

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Abstract

This study analyzed the clothing color preferences of elementary students and the colors of clothes actually worn at school in terms of hue and tone. The sample consisted of 385 students enrolled at a public elementary school in Seoul. In this study, 120 color cards were used to guide the hue and tone. Descriptive statistics and chi-square analysis were used to analyze the data. The results were as follows. First, the most preferred clothing colors were achromatic, purple blue, red, and blue, while the most preferred tones were vivid, and pale. Second, the largest percentage of top colors worn at school were achromatic and vivid tones, while the largest percentage of bottom colors at school were achromatic and dark tones. Third, elementary boys preferred vivid and strong tones, while girls preferred pale and vivid tones. Fourth, students at higher grades preferred deeper and darker tones compared with students in lower grades.

I. Introduction

People prefer certain colors. Color preference is influenced by gender, age, personality, culture, environment, and fashion (Oh, 1999; Yu & Kim, 2013). Color is unconsciously latent and reflected in overall life, affecting emotions, behaviors, and attitudes, such as mood, work efficiency, and health. Seasonality is also an important factor affecting the preference for color (Korea Society of Color Studies, 2002). In fashion, seasonal colors are transformed into clothes; therefore, spring colors are pastel tones, summer colors are vibrant, and autumn colors are dark and clear (Rhee, 2003).

When choosing clothing, children prioritize the design, color, texture, and pattern. Thus, color is an important criterion of clothing selection (Choi, 1988). An important function of color is to make things recognizable, create beauty, and express emotions (Spears, 1965). Children aged 9–10 years are interested in the colors of clothing, recognize their favorite colors in their clothing, and have a sense of psychological stability when dressed in their favorite colors (Hurlock, 1960). It is necessary to study clothing color preference because color takes priority among the factors to consider when buying or choosing clothing.

Research on the preferred color of children only gained interest in Korea in the 1970s. According to the studies published so far, children's preferred colors tend to change from warm to cold colors as their age increases, from long wavelength to short wavelength colors (Jeon & Lee, 2001). Color-related studies for elementary students or children were conducted a long time ago and were conducted by choosing the name of the color or by providing a limited number of color chips rather than providing systematic color chips. Color samples used as research tools in adult studies were limited to 10 representative colors of Munsell's color system, or 20 colors added with achromatic and pastel-toned colors. It will be possible to study the concrete and systematic preferred clothing color by researching the color and tone with a detailed tool. Therefore, the purpose of this study is to analyze the

preferred clothing colors of elementary students (which has rarely been studied) and analyze the colors of their clothes worn at school.

II. Review of Literature

1. Color

Color refers to the perception of color through the eyes as the object reflects and consists of three attributes: hue, value, and chroma. Hue is the name of color that is distinguished according to sensation, and it is called the Color Wheel (Color Circle) made by organizing similar color hues in a round shape. The Color Wheel shows the chromatic relationships between pure primary colors, secondary colors that line up between the primary colors, and tertiary colors that are made by mixing a primary color with a secondary color. Value (lightness) refers to the degree of lightness and darkness of a color. It has 11 levels of gray scale, with the brightness of pure black as 0 and the brightness of pure white as 10. Chroma refers to the strength and purity of the surface color, even though the same hue can be clear or hazy. Chroma is determined by the degree of weakness of the color (Rhee, 2003; Ryu, Kim & Kan, 2006).

It is called the color standard that the color is standardized by means of measuring, conveying, storing, and managing color quantitatively accurately. The color system adopted for educational purposes in Korea is the color system developed by Munsell. The Munsell color system was created in 1905 for the purpose of color education by arranging the three attributes of color perception according to human senses. Munsell uses hue, value, and chroma in the following way: HV/C. For example, 5R4/14 reads 5R (hue), 4 (value), and 14 (chroma). The Munsell colors are based on the five primary colors of red, yellow, green, blue, and purple (R, Y, G, B, and P). YR, GY, PB, BG, and RP are placed between primary colors. These 10 colors are basic colors. Value is based on 11 levels of black 0 to white 10. Chroma represents the continuum or scale from achromatic 0 to pure color (Rhee, 2003; Ryu et al.,

2006).

Tone is a concept that combines value and chroma, which means differences in contrast and intensity. In general, tones include vivid, bright, strong, deep, light, dull, dark, pale, light grayish, grayish, and dark grayish (Korea Society of Color Studies, 2002). Sometimes soft or very pale tones are added, depending on the references and sources.

2. Preferred Clothing Color

Clothing color is an important attribute to consider when purchasing clothing. Men consider color the most important factor when purchasing clothes, and women see color after line(style) (Park, 1995). Research on clothing color preference has been done on various subjects. In a study by Yoon, Kim, and Park (1990) analyzing clothing color preference for children aged 4–5 years, girls preferred pink and boys preferred blue. Both boys and girls disliked black. Their preferred colors were bright color, such as red, yellow, orange, green, and blue. Children's clothing should also reflect their color preferences (Kim, 1987).

In Lee and Suh's (1992) study on the preference of clothing color among female middle school students, their preferred colors were purple and white, followed by yellow. The preferred colors of tops were white, yellow, and then blue violet, and those of bottoms were black, blue violet, and then indigo blue. Their preferred color in general as well as for clothing by season and for tops and bottoms, differed according to age. Personal characteristics, such as personality, skin color, and physical index, did not have a significant effect on the choice of preferred clothing colors. Kim (1998) studied the preferred color and color association of female middle school students. Female middle school students preferred light and primary colors like blue, yellow, and white. Their preferred clothing colors were black, white, and yellow, in that order. Thus, their preferred colors and preferred clothing colors did not match.

Park (1995) found that the preferred clothing colors were white, yellow green, and indigo blue in early youth,

and green, white, and indigo blue in late youth. In the study by Kim, Moon, and Hahn (2000) regarding the clothing color preference of women in their 20s to 50s, the tendency to favor achromatic-colored clothes is higher in younger generations. However, as age increases, the preference of achromatic colors decreases and the preference of chromatic colors except for yellow increases. It can be concluded that the preference of various chromatic colors is higher than that of achromatic colors as age increases after late youth.

Studies on the preferred colors of middle school students and older individuals have been conducted recently, but no recent research has been done on elementary school students. Most research on colors has merely involved some major color names or a small number of color chips from which to choose. Thus, it is necessary to study the topic more systematically and relevant to the current cultural climate.

III. Research Methods

1. Research Problems

To achieve the purpose of the study, the research problems are as follows.

First, the preferred clothes colors of elementary students and the colors of clothes actually worn at school are classified based on hue and tone.

Second, the differences in gender are examined in terms of the preferred clothes color and the color of clothes actually worn at school.

Third, the differences in grades are examined in terms of preferred clothes color and the color of clothes actually worn at school.

2. Measurement Tool

To determine students' clothing color preferences, 120 color cards developed based on the research of IRI color research institute were used as a measurement tool. The color cards used in this study consist of 120 colors: 110 chromatic colors (10 hues * 11 tones) and 10

	R	YR	Y	GY	G	BG	B	PB	P	RP	N
V											N9.5
S											N9
B											N8
P											N7
Vp											N6
Lgr											N5
L											N4
Gr											N3
DI											N2
Dp											N1.5
Dk											

Figure 1. Hues and Tones of Color Cards

achromatic colors expressed as N(Neutral) in the measurement tool. The 120 color cards used as measurement tools are shown in Figure 1. The hues were based on 10 basic colors: R (red), YR (yellow red), Y (yellow), GY (green yellow), G (green), BG (blue green), B (blue), PB (purple blue), P (purple), and RP (red purple). The tones were vivid, strong, bright, pale, very pale, light grayish, light, grayish, dull, deep, and dark.

3. Subjects

The subjects were 460 students from a public elementary school in Seoul, Korea where students do not wear school uniforms. First-grade students who may have difficulty completing the questionnaires were excluded from the survey, and the subjects were limited to students in grades 2 to 6. The researcher visited every classroom and led a survey. The class members answered the questionnaire at the same time. The subjects were asked to fill in the questionnaires with 120 color cards. It took a lot of time to find the color cards and to finish the questionnaire so that students are allowed to

respond in sufficient time. During the survey, a researcher responded to the students' questions regarding survey and color card and helped students with difficulties. The final 385 questionnaires were analyzed after eliminating the questionnaires with unreliable responses and missing values. In particular, in the lower grades, the questionnaire was excluded as much as possible because of the low reliability and missing values.

4. Data Analysis

The collected data were analyzed using SPSS 18.0 (ver) program. The descriptive statistics and the χ^2 test were used to confirm the gender and grade differences in terms of preferred clothing color and color worn at school. In the case of achromatic colors, the hue was included for analysis.

The respondents were 185 male students (48.11%) and 200 female students (51.9%). There were 37 students in second grade (9.6%), 52 in third grade (13.5%), 94 in fourth grade (14.7%), 95 in fifth grade (14.7%), and 107 in sixth grade (27.6%).

IV. Results and Discussion

1. Preferred Clothing Color

Table 1 shows the colors of clothing preferred by elementary students. The preferred clothing colors were N (127 students, 33.0%), PB (67, 17.4%), R (39, 10.1%), B (33, 8.6%), and Y (30, 7.8%). The preferred clothing tones were vivid (83 students, 32.1%) and pale (45 students, 17.4%) in order. Thus, elementary school students seemed to like sharp or light tones. When combining colors and tones, the preferred clothing colors were black (69 students, 17.9%), vivid toned R (25 students, 6.5%), and vivid toned RP (22 students, 5.7%).

Choi (1988) reported that children's favorite clothing colors were yellow, blue, light blue, and white. The results of this study showed that children's favorite clothing colors were N, PB, R, B, and Y. The results were similar in both studies. However, compared with the previous study, this study showed that the students preferred N and PB. This result can be attributed to changes in preferred clothing colors due to the change over time and surveyed season.

Table 2 shows the color of students' actual clothes worn at school on the day of survey. The students were

most likely to wear N (174 students, 44.9%) followed by PB (52, 13.5%), R (45, 11.7%), Y (22, 5.7%), and RP (21, 5.5%). The tones of the tops worn were, in order of preference, vivid (67, 31.7%), dark (39, 18.4%), and strong (27, 12.7%).

Table 3 shows the colors of the bottoms worn at school on the day of survey. N (206 students, 53.5%) accounted for more than half of the students, followed by PB (96, 24.9%). Therefore, the combined ratio of the two hues was overwhelmingly high at 78.4%. The tones of the bottoms were, in the order of preference, dark (79, 44.2%), deep (27, 15.1%), and vivid (23, 12.8%). This is likely due to the fact that the students wear jeans or dark-colored bottoms.

2. Preferred Clothing Color by Gender

As a result of χ^2 analyses, the differences in preferred hue ($\chi^2=40.815$, $p<.001$) and in preferred tone ($\chi^2=63.70$, $p<.001$) were significant for boys and girls in clothing colors. When comparing the expected frequency with the observed frequency, elementary boys preferred N and PB hues more than female students, and female students preferred BG, P, and RP more than boys. Elementary boys preferred vivid and strong tones compared

Table 1. Preferred Clothing Colors

Hue	Number	Percent(%)	Tone	Number	Percent(%)
R	39	10.1	Vivid	83	32.1
YR	8	2.1	Strong	23	8.9
Y	30	7.8	Bright	34	13.2
GY	16	4.2	Pale	45	17.4
G	14	3.6	Very Pale	31	12.0
BG	20	5.2	Light Grayish	1	.4
B	33	8.6	Light	8	3.1
PB	67	17.4	Grayish	2	.8
P	16	4.2	Dull	2	.8
RP	15	3.9	Deep	9	3.5
N	127	33.0	Dark	20	7.8
Total	385	100.0	Total	258	100.0

Table 2. Top Colors Worn at School

Hue	Number	Percent(%)	Tone	Number	Percent(%)
R	45	11.7	Vivid	67	31.7
YR	13	3.4	Strong	27	12.7
Y	22	5.7	Bright	16	7.5
GY	7	1.8	Pale	12	5.7
G	11	2.9	Very Pale	10	4.7
BG	10	2.6	Light Grayish	3	1.4
B	16	4.2	Light	6	2.8
PB	52	13.5	Grayish	5	2.4
P	15	3.9	Dull	9	4.2
RP	21	5.5	Deep	18	8.5
N	173	44.9	Dark	39	18.4
Total	385	100.0	Total	212	100.0

Table 3. Bottom Colors Worn at School

Hue	Number	Percent(%)	Tone	Number	percent(%)
R	9	2.3	Vivid	23	12.8
YR	11	2.9	Strong	14	7.8
Y	15	3.9	Bright	1	.6
GY	12	3.1	Pale	5	2.8
G	4	1.0	Very Pale	3	1.7
BG	3	.8	Light Grayish	2	1.1
B	14	3.6	Light	4	2.2
PB	96	24.9	Grayish	7	3.9
P	7	1.8	Dull	14	7.8
RP	8	2.1	Deep	27	15.1
N	206	53.5	Dark	79	44.2
Total	385	100.0	Total	179	100.0

to girls, and girls showed a higher preference for pale and very pale tones than boys. Table 4 shows the difference in color preference according to gender.

The hues of the tops worn by boys were N (97 students), PB (27), and R (21); the hues of the tops worn by girls were N (76), PB (25), R (24), and Y (16). Both boys and girls wore achromatic colors overwhelmingly on the day of survey. The tones of the

tops worn by boys were vivid (35 students), dark (15), strong (11), and deep (11) and the tones of the tops worn by girls were vivid (32), followed by dark (24), strong (16), and pale (12).

As a result of χ^2 analyses, the differences in hue ($\chi^2=43.19$, $p<.001$) and in tone ($\chi^2=21.10$, $p<.05$) of tops worn by boys and girls were statistically significant. When comparing the expected frequency with the

Table 4. Preferred Clothing Colors according to Gender

Hue	Male Students	Female Students	χ^2	Tone	Male Students	Female Students	χ^2
R	16 (18.7)	23 (20.3)	40.81***	Vivid	52 (35.1)	31 (47.9)	63.70***
YR	4 (3.8)	4 (4.2)		Strong	18 (9.7)	5 (13.3)	
Y	13 (14.4)	17 (15.6)		Bright	14 (14.4)	20 (19.6)	
GY	5 (7.7)	11 (8.3)		Pale	5 (19.0)	40 (26.0)	
G	8 (6.7)	6 (7.3)		Very Pale	2 (13.1)	29 (17.9)	
BG	4 (9.6)	16 (10.4)		Light Grayish	1 (.4)	0 (.6)	
B	15 (15.9)	18 (17.1)		Light	4 (3.4)	4 (4.6)	
PB	41 (32.2)	26 (34.8)		Grayish	1 (0.8)	1 (1.2)	
P	3 (7.7)	13 (8.3)		Dull	0 (0.8)	2 (1.2)	
RP	0 (7.2)	15 (7.8)		Deep	4 (3.8)	5 (5.2)	
N	76 (61.0)	51 (66.0)		Dark	8 (8.4)	12 (11.6)	
Total	185	200			Total	109	

*** $p < .001$

observed frequency, elementary boys wore N and G hues more than female students, and female students wore Y, P, and RP more than boys. Elementary boys wore vivid and deep-toned tops more than girls, and girls wore pale-toned tops more than boys. Table 5 shows the differences in the tops worn by the students at school.

The most common hues of the bottoms worn by boys were N (111 students) and PB (39) and those worn by girls were N (95) and PB (57). Both boys and girls wore achromatic colors and PB hues overwhelmingly at school. The tones of the bottoms worn by boys were most often dark (33) and vivid (15), and those worn by girls were dark (46) and deep (18). This is likely due to the fact that the students mostly wear black pants and jeans at school. As a result of χ^2 analyses, the differences in the hues ($\chi^2=16.10$) and tones ($\chi^2=16.04$) of the bottoms worn by boys and girls were not statistically significant. Table 6 shows the differences in the actual bottoms worn by the students at school.

3. Preferred Clothing Color according to Grade

The differences in the preferred clothing colors by grades are shown in Table 7. The clothing hues preferred by the lower graders were N (49 students), PB (29), R (22), and B (20). Clothing hues preferred by higher graders were also N (78), PB (38), R (17), and B (13). As a result of the χ^2 analysis, it was not statistically significant ($\chi^2=16.23$), but the difference between the expected frequency and the observed frequency of N was large, indicating that the higher graders preferred achromatic colors than the lower graders. Lower graders prefer vivid (41), pale (26), and bright (22) tones, and higher graders prefer vivid (42), pale (19), and dark (15) tones. Although the difference in the clothing tones preferred by grades was not statistically significant ($\chi^2=14.65$) in the χ^2 analysis, lower graders prefer lighter tones, such as bright, pale, and very pale tones compared to higher graders, while higher graders prefer darker tones.

Table 5. Top Colors Worn at School according to Gender

Hue	Male Students	Female Students	χ^2	Tone	Male Students	Female Students	χ^2
R	21 (21.6)	24 (23.4)	43.19***	Vivid	35 (27.8)	32 (39.2)	21.10*
YR	7 (6.2)	6 (6.8)		Strong	11 (11.2)	16 (15.8)	
Y	6 (10.6)	16 (11.4)		Bright	6 (6.6)	10 (9.4)	
GY	3 (3.4)	4 (3.6)		Pale	0 (5.0)	12 (7.0)	
G	9 (5.3)	2 (5.7)		Very Pale	2 (4.2)	8 (5.8)	
BG	3 (4.8)	7 (5.2)		Light Grayish	0 (1.2)	3 (1.8)	
B	10 (7.7)	6 (8.3)		Light	1 (2.5)	5 (3.5)	
PB	27 (25.0)	25 (27.0)		Grayish	2 (2.1)	3 (2.9)	
P	2 (7.2)	13 (7.8)		Dull	5 (3.7)	4 (5.3)	
RP	1 (10.1)	21 (10.9)		Deep	11 (7.5)	7 (10.5)	
N	97 (83.1)	76 (89.9)		Dark	15 (16.2)	24 (22.8)	
Total	185	200			Total	88	

* $p < .05$, *** $p < .001$

Table 6. Bottom Colors Worn at School according to Gender

Hue	Male Students	Female Students	χ^2	Tone	Male Students	Female Students	χ^2
R	5 (4.3)	4 (4.7)	16.10	Vivid	15 (9.5)	8 (13.5)	16.04
YR	2 (5.3)	9 (5.7)		Strong	6 (5.8)	8 (8.2)	
Y	8 (7.2)	7 (7.8)		Bright	0 (.4)	1 (0.6)	
GY	6 (5.8)	6 (6.2)		Pale	1 (2.1)	4 (2.9)	
G	1 (1.9)	3 (2.1)		Very Pale	0 (1.2)	3 (1.8)	
BG	2 (1.4)	1 (1.6)		Light Grayish	2 (0.8)	0 (1.2)	
B	8 (6.7)	6 (7.3)		Light	0 (1.7)	4 (2.3)	
PB	39 (46.1)	57 (49.9)		Grayish	2 (2.9)	5 (4.1)	
P	2 (3.4)	5 (3.6)		Dull	6 (5.8)	8 (8.2)	
RP	1 (3.8)	7 (4.2)		Deep	9 (11.2)	18 (15.8)	
N	111 (99.0)	95 (107.0)		Dark	33 (32.7)	46 (46.3)	
Total	185	200			Total	74	

Table 8 shows the differences in the colors of tops the students wore at school according to grade. The actual hue of the top the lower graders wore at school

were N (82 students), R (23), and PB (19), and the colors the higher graders wore at school were N (91) and PB (33), followed by R (22), confirming that both

Table 7. Preferred Clothing Color according to Grade

Hue	Lower Grader	Higher Grader	χ^2	Tone	Lower Grader	Higher Grader	χ^2
R	22 (18.5)	17 (20.5)	16.23	Vivid	41 (43.1)	42 (39.9)	14.65
YR	4 (3.8)	4 (4.2)		Strong	13 (11.9)	10 (11.1)	
Y	18 (14.3)	12 (15.7)		Bright	22 (17.7)	12 (16.3)	
GY	10 (7.6)	6 (8.4)		Pale	26 (23.4)	19 (21.6)	
G	4 (6.7)	10 (7.3)		Very Pale	19 (16.1)	12 (14.9)	
BG	8 (9.5)	12 (10.5)		Light Grayish	0 (.5)	1 (.5)	
B	20 (15.7)	13 (17.3)		Light	4 (4.2)	4 (3.8)	
PB	29 (31.8)	38 (35.2)		Grayish	1 (1.0)	1 (1.0)	
P	10 (7.6)	6 (8.4)		Dull	0 (1.0)	2 (1.0)	
RP	9 (7.1)	6 (7.9)		Deep	3 (4.7)	6 (4.3)	
N	49 (60.4)	78 (66.6)		Dark	5 (10.4)	15 (9.6)	
Total	183	202			Total	134	

Table 8. Top Colors Worn at School according to Grade

Hue	Lower Grader	Higher Grader	χ^2	Tone	Lower Grader	Higher Grader	χ^2
R	23 (21.4)	22 (23.6)	14.50	Vivid	31 (31.9)	36 (35.1)	22.03*
YR	9 (6.2)	4 (6.8)		Strong	12 (12.9)	15 (14.1)	
Y	10 (10.5)	12 (11.5)		Bright	8 (7.6)	8 (8.4)	
GY	1 (3.3)	6 (3.7)		Pale	5 (5.7)	7 (6.3)	
G	4 (5.2)	7 (5.8)		Very Pale	7 (4.8)	3 (5.2)	
BG	4 (4.8)	6 (5.2)		Light Grayish	0 (1.4)	3 (1.6)	
B	7 (7.6)	9 (8.4)		Light	6 (2.9)	0 (3.1)	
PB	19 (24.7)	33 (27.3)		Grayish	5 (2.4)	0 (2.6)	
P	10 (7.1)	5 (7.9)		Dull	6 (4.3)	3 (4.7)	
RP	14 (10.0)	7 (11.0)		Deep	5 (8.6)	13 (9.4)	
N	82 (82.2)	91 (90.8)		Dark	16 (18.6)	23 (20.4)	
Total	183	202			Total	101	

* $p < .05$

the lower graders and the higher graders wore many achromatic tops. The actual tones of the top the lower graders wore at school were vivid (31 students), dark (16), and strong (12), and the tones the higher graders

wore at school were also vivid (36), dark (23), and strong (15) tones. As a result of the χ^2 analysis, the difference in the hue of tops worn by lower and higher graders was not statistically significant ($\chi^2=14.50$), and

Table 9. Bottom Colors Worn at School according to Grade

Hue	Lower Grader	Higher Grader	χ^2	Tone	Lower Grader	Higher Grader	χ^2
R	8 (4.3)	1 (4.7)	21.03*	Vivid	12 (11.8)	11 (11.2)	10.12
YR	8 (5.2)	3 (5.8)		Strong	5 (7.2)	9 (6.8)	
Y	11 (7.1)	4 (7.9)		Bright	0 (.5)	1 (.5)	
GY	7 (5.7)	5 (6.3)		Pale	4 (2.6)	1 (2.4)	
G	2 (1.9)	2 (2.1)		Very Pale	1 (1.5)	2 (1.5)	
BG	1 (1.4)	2 (1.6)		Light Grayish	1 (1.0)	1 (1.0)	
B	8 (6.7)	6 (7.3)		Light	4 (2.1)	0 (1.9)	
PB	37 (45.6)	59 (50.4)		Grayish	4 (3.6)	3 (3.4)	
P	4 (3.3)	3 (3.7)		Dull	9 (7.2)	5 (6.8)	
RP	6 (3.8)	2 (4.2)		Deep	15 (13.9)	12 (13.1)	
N	91 (97.9)	115 (108.1)		Dark	37 (40.6)	42 (38.4)	
Total	183	202			Total	92	

* $p < .05$

the difference in tone of tops worn by lower and higher graders was statistically significant ($\chi^2=22.03$, $p < 0.05$). Comparing the hues of the preferred clothing color and the clothing color worn at school, both the lower graders and the higher graders are similar in that they prefer achromatic colors, PB, and R hues. Preferred clothing tones are bright or light tones, such as vivid, pale, and bright tones, while clothing worn at school appear to have many shady and powerful tones, such as dark and strong tones. The rate of dark tones might be relatively higher because the survey was done in the winter. In addition, students' favorite light-toned clothes are uncomfortable as activity clothes at school, so they wear dark-colored clothing that is resistant to contamination.

Table 9 shows the differences in the color of bottoms the students actually wore at school according to grade. The actual hues of the bottoms the lower graders wore at school were N (91 students) and PB (37), and the colors of the bottoms the higher graders wore at school were N (115) and PB (59). The hues of the bottoms were overwhelmingly high in achromatic and indigo colors in both the lower and higher graders. The actual

tones of the bottoms the lower graders wore at school were dark (37 students), deep (15), and vivid (12), and the tones of the bottoms the higher graders wore at school were also dark (42), deep (12), and vivid (11). As a result of the χ^2 analysis, the difference in the hue of bottoms worn by lower and higher graders was statistically significant ($\chi^2=21.03$, $p < 0.05$), and the difference in the tone of bottoms worn by lower and higher graders was not statistically significant ($\chi^2=10.12$). Compared to the expected frequency and the observation frequency of the hues of bottoms, lower graders wore bottoms that were R, YR, Y, and RP more than higher graders, and higher graders wore bottoms that were N and PB more than lower grades. Dark tones might be relatively more common because the survey was done in the winter and the lower graders are wearing more colorful bottoms and the higher graders are wearing black pants, leggings, and jeans.

V. Conclusion and Implications

This study examined the preferred clothing colors of elementary students and the colors of clothes actually

worn at school to draw the following conclusions by comparing the preferred clothing color and colors of clothes worn at school by gender and grade.

First, the clothing hues preferred by elementary students were achromatic colors, PB, R, B, and Y, and the preferred clothing tones were vivid and pale. The hues of the tops worn at school were achromatic colors, followed by PB, R, Y, and RP, and the preferred tones of the tops were vivid and dark. The rates of achromatic colors and PB are high in terms of the bottoms worn at school, and the tones were, in order, dark, deep, and vivid.

Second, as a result of analyzing the preferred clothing colors according to gender, elementary school boys prefer achromatic colors and PB hues more than girls, and girls prefer BG, P, and RP more than boys. Elementary boys prefer vivid and strong tones more than girls, and girls have a higher preference for pale and very pale tones than boys. Boys wore achromatic colors and G hued tops more than girls, and girls wore Y, P, and RP more than boys at school. The tones of the tops worn by boys were more vivid and deep in tone than girls, and girls wore more pale tones than boys. The hues of the bottoms of both boys and girls worn at school were overwhelmingly high in achromatic colors and PB and the rate of dark tones was high for both boys and girls.

Third, elementary school students preferred achromatic colors, and vivid and pale were preferred as the tone. Both the lower and higher graders wore many achromatic colors and vivid, dark, and strong tone tops at school. The hues of the bottoms worn at school were overwhelmingly achromatic and indigo blue in both the lower and higher graders. However, it was confirmed that the lower graders wore bottoms with R, YR, Y, and RP hues more than the higher graders, and the higher graders wore bottoms with achromatic colors and PB more than the lower graders.

The findings indicated that there were differences between the male and female students, and between the lower and higher graders in terms of the preferred and worn colors of clothing. In addition, elementary students preferred achromatic colors and wore them often, and

the majority of elementary students wear indigo-colored bottoms like jeans at school. These results may help in choosing and purchasing children's clothing.

This research studied preferred clothing color and wearing color with color cards, not fabric, so it may be slightly different from the colors used for actual clothing due to the effect of material texture. The survey was conducted during the winter, and the trend colors were not considered. Therefore, the survey period can be extended to other seasons, and the trend color at the time of the survey can be considered when analyzing the data.

In the survey process, students showed high interest in the color cards used as a survey tool, but since education on color is not done properly at the school, in-depth education on color is needed, and education on tone and color coordination is also necessary. The results of this study can provide insight into elementary students' tastes and behaviors on colors, and the results can be used in various fields, including education and the development of clothing.

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