

# The Effect of Culture Change on Smartphone Color Preference

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## Abstract

**Background** Culture has an impact on the relationship between a product and an individual, including the individual's color preferences regarding the product. In contrast to prior research that focused only on differences in product color preferences, this research discusses not only cultural differences in color preference but also how these preferences change depending on the cultural context.

**Methods** To investigate color preference differences and changes in color preference, we designed three questionnaires on color preferences for smartphones. For the first questionnaire, the Japanese and Korean participants reported their color preferences after observing mock-ups of smartphones. For the second questionnaire, the Japanese and South Korean participants were asked to draw an "ideal image" of a smartphone, using eight colored crayons. For the last questionnaire, we reused the first questionnaire to investigate the cases of Koreans who had lived in Japan for over a year, in order to see whether their preferences had changed according to changes in their culture.

**Result** The results of the first questionnaire demonstrate that the Korean and Japanese participants differed in their smartphone color preferences. The results of the drawing questionnaire further revealed that Japanese and Korean customers expect different kinds of products when they think of "smartphones." The results of the last questionnaire indicated that the smartphone color preferences of Koreans who had lived in Japan for over a year were similar to those of the Japanese, not the Korean participants.

**Conclusions** The results reveal the cultural differences in smartphone color preferences between Koreans and Japanese. Further, they indicate that changes in a person's cultural background lead to changes in that person's smartphone color preference.

**Keywords** Culture, Color Preference, Change of Preference

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## 1. Introduction

Otherring: transforming a difference into otherness so as to create an in-group and an out-group (Staszak, 2008, p. 1).

As the epigraph above implies, “difference” must be recognized prior and antecedent to the concept, “in and out.” In other words, the recognition of differences is a prior stage to make the concept of discrimination imaginable, and understanding the difference between two subjects is important because it also helps us understand how discrimination between in-group and out-group is constructed.

Probably no realm of human life is free from this aspect, including that of product preference. For example, the recognition of difference between two persons is a necessary prior stage to creating images of “my (e.g.) fancy taste” and “others’ (e.g.) weird taste.” Based on this recognition, the present research explores differences in a specific kind of preference for a specific kind of product: color preference in smartphones. It focuses on differences in preferences between South Koreans and Japanese. Further, this research presumes that such differences in preference can be fairly easily altered and changed, and accordingly, we also investigate changes in preferences when people from one of these groups are immersed in the other.

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## 2. Literature Review

### 2. 1. Culture, Product Cognition, and Product Preference

Culture affects the content and mode of individuals’ behavior. Although cultural differences become weaker with globalization, they can still be found (Kacen & Lee, 2002; Han & Shavitt, 1994; Hofstede, 1991). For example, cultural differences between “individualist” and “collectivist” cultures are likely to trigger differences between participants as illustrated by experiments performed in Kacen and Lee (2002). In their studies, participants from Australia, the United States, Hong Kong, Singapore, and Malaysia responded to a questionnaire. They first categorized cultures as “individualist” (United States and Australia) or “collectivist” (Singapore, Malaysia, and Hong Kong). Interestingly, they found that impulsive buying behavior was stronger among individualists than among collectivists. The result of another study, conducted by Han and Shavitt (1994), also showed that advertisements appealing to individual benefit are more persuasive for American participants than for Korean participants. Thus, the findings of the research showed a clear effect of culture on individuals’ consumer behavior.

If culture affects an individual’s behavior, then it also has an impact on the relationship between that individual and the products he or she uses, part of its general influence on that person’s preferences and tastes.

## 2. 2. Differences among “East Asian” Research Participants.

Interestingly, most research on cultural differences in consumer behavior has focused on differences between “European” or “Western” and “Asian” cultures (Kacen & Lee, 2002; Han & Shavitt, 1994; Hofstede, 1991). Studies in other realms of psychology also focus on the difference between “Western” and “Asian” subjects (Ji, Schwarz, & Nisbett, 2000; Masuda, Gonzalez, Kwan & Nisbett, 2008; Kim, 2002; Masuda & Nisbett, 2000). Kim (2002) also deals with difference between East Asian and European American cultures, indicating that the differences between them may be greater than any differences found between strictly Asian cultures. However, Evers and Day (1997) cast doubt on this viewpoint. In their research, Chinese, Australian, and Indonesian participants reported their preference with regard to a computer interface design that was presented to them. As Evers and Day reported, “one of the key findings of this study was that there are not only interface-relevant cultural differences between Asians and Australians (as expected), but that significant differences also exist within Asian groups specifically, between Indonesians and Chinese (p. 5).” the results demonstrate greater preferential difference between Chinese and Indonesian participants than between Chinese and Australian participants. For instance, Indonesians showed a stronger preference than Chinese and Australian participants for soft colors, black-and-white displays, and pop-up menus.

Moreover, another study conducted in East Asia to illuminate potential cultural differences among subjects who belong to the “East Asian” cultural grouping observed clear differences between Japanese and Korean cultures (Oh & Kim, 2014). They searched fashion magazines in Korea and Japan and demonstrated that Japanese fashion magazines have more “cute” images of female fashion than Korean magazines, while Korean magazines displayed “classic” images. Additionally, they found that fashion magazines in Korean pictured “Western models” more prominently than in Japan.

In the present study, we narrow down the notion of difference in cultures to look at difference between Japan and (South) Korea, in the specific realm of color preference for smartphones. Differences in the color preferences of Korean and Japanese consumers have been examined in prior studies (Cha, 2010; Saito, 1996). This paper builds upon those previous studies by discussing not only differences in preferences but also how people’s preferences can change with changes in their cultural backgrounds.

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## 3. Method

To investigate differences and changes in smartphone color preferences, three hypotheses were set, and three questionnaires designed and implemented to verify them.

### 3. 1. Hypothesis 1 and the First Questionnaire

We assumed that differences in color preference would be reflected in smartphone color choice.

H1: Color preferences will be influenced by culture and gender.

This hypothesis reflects that colors favored by male and female users are also expected differ according to culture. For example, a case where a black smartphone is favored by both male and female consumers in Korea, but only by male consumers in Japan, would indicate a cultural difference, where a black smartphone would be regarded as a unisex product in Korea but not in Japan.

To verify Hypothesis 1, the first questionnaire was designed and implemented. In all, 57 Japanese students (male: 36, female: 21) at Chiba University and 64 Korean students (male: 35, female: 29) at Yonsei University responded to the questionnaire (total respondents: 121). All participants were in their 20s. The participants answered the questionnaire while observing mock-ups of smartphones in different colors: first, mock-ups of a tablet-style smartphone (Sony\_ZUltraSOL24) in three colors (black, white, and purple), which the participants had to rank in order of preference on a seven-point Likert-type scale, and second, mock-ups of another smartphone (Sony\_Z1fSO-02F) in four colors (black, white, yellow, and pink), ranked the same way.



Figure 1 Mock-ups used in the questionnaire

### 3. 2. Hypothesis 2 and the Second Questionnaire

Next, we investigated differences in the ideal images of smartphone colors held by Japanese and Koreans. The result of the first questionnaire may show differences in color preferences between Japanese and Korean participants. However, a difference in preference does not mean a difference in cognitive images. To be more specific, in the last questionnaire, participants reported their preference based on the mock ups that were presented by the researcher. In contrast, to investigate the differences in the ideal images of smartphone colors held by Japanese and Koreans, a hypothesis was set as follows.

H2: The ideal colors of smartphones imagined by Japanese participants are different from those imagined by Korean participants.

To verify Hypothesis 2, another questionnaire was designed and implemented. It consisted of one item: a drawing exercise in which participants were asked to draw an “ideal smartphone” in its actual size. The researcher asked the participants to include a “home button” while drawing the smartphone and to color the picture. The participants drew a front view and a

side view of the smartphones; they used only the eight colored crayons that were given to them. In all, 40 Japanese students at Chiba University (Female: 22, Male: 18) and 37 Korean students at Yonsei University (Female: 16, Male: 21) responded to the questionnaire (total respondents: 77).

Subsequently, the colors that each participant used in their drawings were analyzed and grouped into three categories based on color diversity. Drawings that were black and white only were grouped together as were drawings with one color (not black or white) and finally drawings with more than two colors.

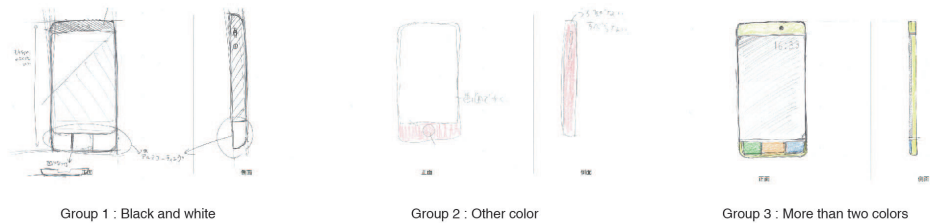


Figure 2 Analyzing colors used in the second questionnaire

### 3. 3. Hypothesis 3 and the Third Questionnaire

This study deals not only with color preferences but also with change in them coming along with cultural change. The following hypothesis is based on the assumption that a change in one's culture will lead to a change in one's smartphone color preference.

H3: The smartphone color preference of an individual will change according to changes in their culture.

To verify Hypothesis 3, the third questionnaire was designed and implemented. In all, 23 Korean students who had been studying at Chiba University for over a year responded to the questionnaire (Female = 12, Male = 11). All the participants were in their 20s. The questionnaire was the same as the first questionnaire but with an added item in which the participants reported how many years they had been living in Japan.

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## 4. Results

### 4. 1. Difference in Color Preference

First, Japanese participants showed stronger preference for yellow smartphones compared to Korean participants. The ANOVA results show that cultural differences affect the preference score for the yellow smartphone ( $F(1,117) = 10.19, p < .01$ ). To be specific, the results of the t-test show that the Korean participants did not prefer yellow smartphones as much as the Japanese participants did ( $M_{\text{Korean}} = 3.45, M_{\text{Japanese}} = 4.23; t(119) = 3.00, p < .01$ ).

**Table 1** Results of the first questionnaire

Color of Smartphones	Group	Mean	SD	t	p
Yellow	Korean	3.45	1.30	3.00	.003
	Japanese	4.23	1.56		
Black	Japanese Male	5.28	1.00	3.10	.003
	Japanese Female	4.33	1.28		
	Korean Male	5.20	1.39	0.96	.375
	Korean Female	4.90	1.08		
Pink	Korean Female	4.03	1.08	2.85	.006
	Japanese Female	5.05	1.08		

Second, the black smartphone (ZifSO-02F-Black) was preferred by both males and females in Korea, but not in Japan. Gender was found to influence the preference score for the black smartphone ( $F(1, 117) = 7.92, p < .05$ ). There was a difference between the preference of Japanese male and female participants ( $M_{\text{JapaneseMale}} = 5.28, M_{\text{JapaneseFemale}} = 4.33; t(57) = 3.10, p < .01$ ). However, there was no difference by gender for the Koreans ( $M_{\text{KoreanMale}} = 5.20, M_{\text{KoreanFemale}} = 4.90; t(64) = 0.96, ns$ ). This means that the black smartphone is regarded as a unisex product in Korea, but a masculine product in Japan.

Third, the Japanese female participants showed stronger preference for pink smartphones compared to the Korean female participants. The preference for the pink smartphone (ZifSO-02F-Pink) was affected by both culture and gender (Culture:  $F(1,117) = 5.50, p < .05$ ; Gender:  $F(1,117) = 8.53, p < .01$ ). Interestingly, Japanese female participants preferred pink smartphones more than the Korean female participants did ( $M_{\text{KoreanFemale}} = 4.03, M_{\text{JapaneseFemale}} = 5.05, t(48) = 2.85, p < .01$ ).

#### 4. 2. Differences in Cognitive Images of Japanese and Koreans

With regard to the second questionnaire (Hypothesis 2), the imagined colors for the phones clearly demonstrate the difference between the Japanese and Korean participants ( $\chi^2 = 8.1, p < .05$ ). Only 13.5% of the Korean participants used colors other than black and white (Another = 5.4%; More than two = 8.1%), in contrast to 42.5% of the Japanese participants (Another = 22.5%; More than two = 22.0%). However, black and white were the most popular colors for both, Japanese and Korean participants: 57.5% of the Japanese participants drew smartphones using only black and white, in contrast to 71.4% of the Korean participants.

**Table 2** Use of colors for an ideal smartphone

			Use of Colors			
			Black and White	Another Color	Two or More	Total
Culture	Japanese	Count	23	9	8	40
		%	57.5%	22.5%	20.0%	100%
	Korean	Count	32	2	3	37
		%	86.5%	5.4%	8.1%	100%
Total		Count	55	11	11	77
		%	71.4%	14.3%	14.3%	100.0%

### 4. 3. Changes in One's Culture, Change in One's Preference

Before discussing the results of the third questionnaire (Hypothesis 3), we should consider the criteria by which change in preference is determined. In this section, the results of the first questionnaire were taken as the criteria. However, among the three results on the first questionnaire, two were associated with gender; therefore, only one result from the first questionnaire was selected as a criterion: The strong preference for yellow smartphones shown by Japanese participants as compared to Korean participants.

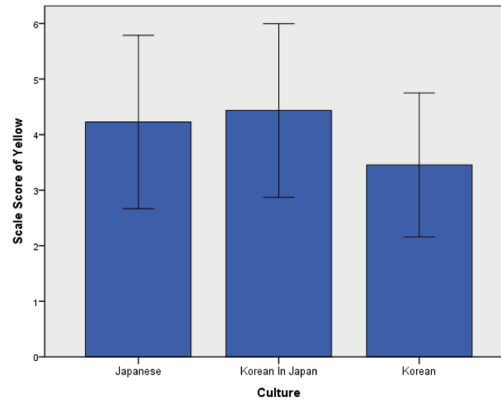


Figure 3 Preference for the yellow smartphone

The results show that Korean participants who have been living in Japan display a strong preference for yellow smartphones. That is, their preference is more similar to the Japanese participants' preference than to the Korean participants' preference. A post-hoc test (Scheffé test) revealed that these differences in preferences were significant. The difference between the Korean participants living in Korea and those living in Japan was significant (DIFF = 0.98, SD = 0.35,  $p < .05$ ), whereas no such difference in preference was found between the Japanese participants and the Korean participants living in Japan (DIFF = 0.21, SD = 0.35, ns).

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## 5. Discussion

In the first and second questionnaires, Japanese participants showed more preference for colorful smartphones than Korean participants did. Considering that smartphone color is not really related to function, the result reflects differences between Korean and Japanese preference regarding "hedonic products." Shoyama, Tochiyama, and Kim (2003) support this point of view. In their experiment, Japanese and Korean participants were asked to choose ideal clothing colors for elderly people; the results showed that "Korean students considered achromatic colors (light gray, medium gray, and white) ideal for elderly woman" (p. 144). In contrast, "Japanese consumers prefer clothing of red hue or light grayish-orange" (p. 139). This result also implies that Japanese customers prefer colorful clothing more often than Korean customers. Therefore, it can be assumed that Japanese consumers' preference for a fashion or hedonic item is more colorful than that of Korean consumers.

Moreover, the results of the last questionnaire showed that a person's preference changes according to change in the person's culture. This result makes readers think that "I may be changed into 'another' as my cultural backgrounds change." As a result, readers become more able to understand "others" and "their weird preferences" than before.

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## 6. Conclusion

This research investigated differences between the preferences of Korean and Japanese participants. Then, we moved on to investigate whether changes in a person's cultural background led to changes in their preferences, and found that they did.

In section 2, the relationship between culture and product preference was explored based on the literature, and it was shown that culture affects individuals' preference for products. Further, we pointed out that there were relatively few studies showing the difference among "East Asian" subjects, and narrowed down the notion of difference between cultures to focus on difference between Japan and Korea.

To investigate differences in preference between Japan and Korea, and change of the preferences, three hypotheses were adopted. To verify the hypotheses, three questionnaires were designed. The first questionnaire was based on the hypothesis that smartphone color preferences would be influenced by culture and gender. The results of the first questionnaire verified the hypothesis: Japanese participants showed stronger preference for yellow smartphones compared to Korean participants. Second, black smartphones were preferred by both male and female Koreans, but not in Japan. Third, the Japanese female participants showed stronger preference for pink smartphones compared to the Korean female participants.

The second (drawing) questionnaire was designed to verify the hypothesis that the ideal colors of smartphones as imagined by Japanese participants are different from those imagined by Korean participants. Japanese participants used more colors to draw smartphones than Korean participants did, revealing the differences in their product preference.

In the third (last) questionnaire, items were used to verify the hypothesis that the preferences of individuals change along with changes in their culture. Korean students who studied in Japan for over a year responded to the questionnaire. The result showed that their preference is more similar to that of Japanese participant than Korean participants' preference.

This research thus reveals that differences between smartphone color preferences of Koreans and Japanese, and also implies that changes in a person's cultural background lead to changes in their preferences.



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