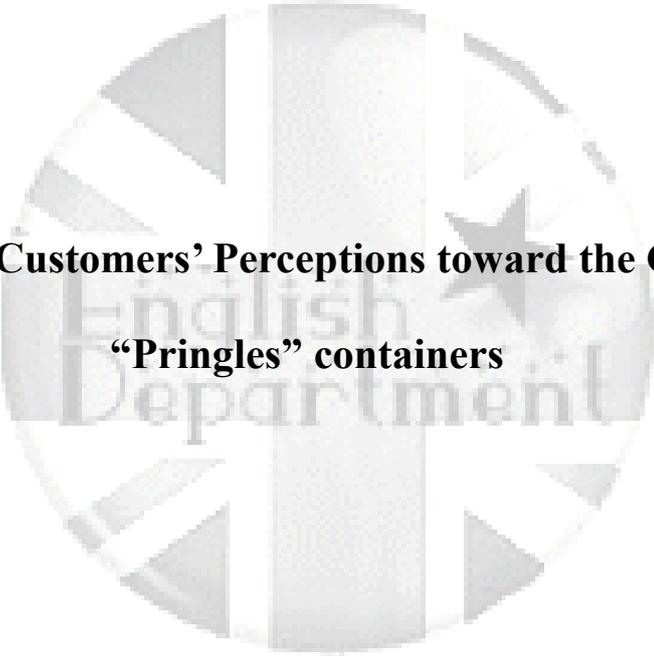


**Wenzao Ursuline University of Languages**

Research Writing



**Exploring Customers' Perceptions toward the Colors of  
"Pringles" containers**

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## **Abstract**

Color plays an important role in design for a product because it can attract customers and arouse viewers' perceptions. It is interesting to explore packaging colors of snack food such as Pringles. This study aims to explore the customers' perceptions toward the six packaging colors, and the preferences for packaging colors. Online questionnaires were designed. 133 participants were invited to take part in this study. Findings revealed that these six packaging colors elicit the expectation from the participants. In particular the vivid cyan color elicits the mild flavor and sour feelings. On the other hand, preference of colors is very subjective. The attractive color is the vivid red color and followed by the dark pink color. In particular the top three dislike packaging colors are the white, vivid cyan, and dark pink. While most of the females dislike the white, most of the males dislike the vivid cyan. This study enhances our understanding of the colors of package designs which color may use to attract customers, and the colors would elicit the perceptions, but the idea of perception did not have obvious gender and age differences.

**Keywords:** packaging colors, perceptions, preferences

## Contents

Introduction.....	122
Review of the Literature .....	123
Research Methods.....	125
Findings and Discussion .....	127
Conclusion .....	134
References.....	135



## **Introduction**

The concept of package is to manifest effectively all information about products and convey the brand spirits (Sun, 2013). As Wei, Ou, Luo, and Hutchings (2014) claimed “colour plays an important role in design. It is a trigger to arouse viewers’ emotions and a carrier that designers use to deliver information.” (p.109) Besides, although color is not the only factor that influences selling a product, it is one factor that attracts the customers. If using the wrong color, the products may have poor sales (Kilinç, 2011).

Previous studies have examined the relationship between the colors of packaging designs and the consumer expectations. For example, the preferences of packaging colors differ according to age and sex (Kilinç, 2011; Sun, 2013; Wei et. al., 2014). In addition, colors have the strength to affect people’s feelings, and bring about the psychological effects (Date, 2012). According to Wei and his colleagues (2014), the packaging colors can elicit customers’ psychological responses of several aspects: judgments of the color harmony of the packages and, liking, quality, and freshness of the products. These previous studies took the fruit juice cartons, the canned Beer, and the clothes as the research models. As a result, different types of items have their proper colors, and the packaging colors can elicit varied psychological responses from customers. It is interesting to further explore snack foods such as “Pringles,” potato chip containers. The purpose of this study is to explore the preferences for colors of the potato chip containers, and customers’ perceptions. Results will enhance our understanding of the colors of package designs and whether different colors may affect the customers’ perceptions.

## **Review of the Literature**

According to the research literature, color preferences differ according to age, sex, personalities, values, and constellations (Tai, 2013; Lee, Gong, & Leung, 2014; Kiliñç, 2011; Lin, 2000). As Kiliñç (2011) claimed children, aged six to nine, picked their favorite clothing color would not be influenced by clothing types. However, according to different blood types, color preferences have no obvious differences (Lin, 2000). Concerning product packaging, “Color will almost always help to attract buyers and differentiate one product from another” (Sherin, 2011, p.126). Designers have to select which colors are appropriate because packaging colors may have an impact on sales volume (Wei et. al., 2014; Sun, 2013; Sherin, 2011). When selecting colors, designers try to achieve color harmony (Sherin, 2011). The reasons are that good color combinations not only increase the delights of using products, but also promote the practicability, the legibility, and the adding value of products (Tai, 2013; Sherin, 2011). However, Wei and his colleagues’ research (2014) showed that only two conventional color harmony principles are tenable for juice packaging. Moreover, not only the color but also the font on Beer packaging may influence consumers to select Beers (Sun, 2013).

Based on the research literature, colors may evoke some psychological effects (Wei et. al., 2014; Kaya & Epps, 2004; Tai, 2013; Date, 2012; Sherin, 2011; Zellner & Durlach, 2003; Deliza, Macfie & Hedderley, 1999). Besides, the hue, lightness, and saturation of colors may influence our perceptions (Wei et. al., 2014; Kaya& Epps, 2004). In the region of food products, colors on packages and colors of food itself can evoke and influence pre-experienced expectations, such as sweetness, pureness, freshness, naturalness, flavor intensity, liking, etc (Deliza, Macfie, & Hedderley, 1999; Wei et. al., 2014; Zellner& Durlach,2003).

Zellner and Durlach (2003) examined the effect of colors of beverages' solutions on expected and experienced refreshment, intensity, and liking of three differently flavored beverages (lemon, mint, and vanilla). There were two groups of participants: expectation group and taste group. They found the brown lemon and mint solutions were less refreshing than differently colored solutions of the same flavor. However, the brown vanilla beverage was not different from other colors of vanilla beverages. Intensity ratings varied with color. Subjects rated the yellow lemon solution, the green mint solution, and the brown vanilla would taste stronger than other colored solutions in the expectation group. On the other hand, in the taste group subjects rated the clear lemon solution as an intense solution. However, there is no significant difference in intensity judgments between the differently colored vanilla solutions and mint solutions.

Wei and his colleagues (2014) investigated the relationships between color schemes of packaging and expectations of quality and freshness. In their study, observers assessed fruit juicy cartons with 20 different background colors using four semantic scales, color harmony (disharmonious-harmonious), liking (dislike-like), quality (poor quality-high quality), and freshness (stale-fresh). They found color harmony of fruit juice packages, liking and quality of the products were highly correlated because observers' expectations were influenced by the chromatic and hue differences between the colors of the packages. Observers' expectations of the freshness were affected by the lightness and chroma of the package colors.

Zellner and Durlach (2003) showed that the three flavored beverages were influenced customers expectations such as refreshment and intensity by vary colored solutions. Wei and his colleagues (2014) also manifested that juice package colors affect consumers' two expectations: product quality and freshness. Hence, it is interesting to further explore snack foods such as "Pringles". In order to enhance our

understanding of the colors of package designs and whether different colors may affect the customers' perceptions, this study used six different flavors Pringles to investigate the relationship between colors of packaging and consumers' perceptions.

Following research questions are:

1. What are customers' perceptions toward the colors of packages?
2. Which container package has the attractive color?

## Research Methods

The purpose of this study is to explore customers' perceptions toward the colors of "Pringles" containers, and preferences for the colors. It attempts to understand customers' various perceptions toward the colors of Pringles containers, and different preferences for the colors.

### Participants

There are 133 participants, 37 males and 96 females, in total who filled out the questionnaires online. All of the 133 participants passed the Ishihara test, color vision test that they had to identify the number on three figures and were thus regarded as having norm color vision. Demographic details of these participants are shown as follows in Table 1.

**Table 1: Backgrounds of participants (Gender and Age)**

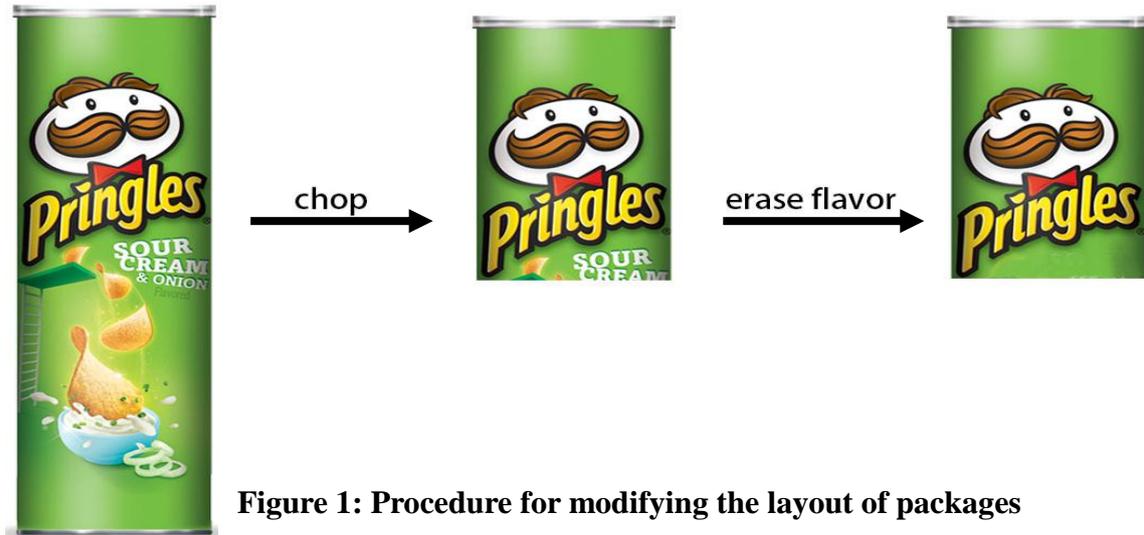
		Gender		
		Female	Male	Total
Age	under 14 years old	0	2	2
	15-24 years old	16	12	28
	25-34 years old	29	12	41
	35-44 years old	41	8	49
	45-54 years old	9	3	12
	over 55 years old	1	0	1
Total		96	37	133

## **Instruments**

Questionnaires were used for this study as the major method for online data collection. They were divided into four parts in the questionnaire. The first part was the Ishihara test, which participants had to identify the number on three figures to examine whether participants have norm color vision or not. The second part, participants were asked about how they feel the products when they see those colors of packages, and which container package has the attractive colors. Those questions aimed to explore customers' perceptions toward the colors of "Pringles" containers, and their color preferences. The third part focuses on likeness of Pringles, willingness of buying a new flavor or a new packaging Pringles, and purchasing experience. The last part was the background information of the participants, who were asked about their age, gender, degree, and residence.

## **Research Procedure**

The images of Pringles containers were captured from Pringles website. Due to the purpose of this study focusing on colors and customers' perceptions, the pictures and the flavor names on the containers would affect participants' perceptions. Therefore, after capturing the images of products, Photoshop CC was used to modify them. As shown in Figure 1, the original size of container was chopped half, and then the flavor names were erased. There were six images of Pringles containers which had different colors such as vivid red, moderate green, vivid cyan, white, vivid orange, and dark pink used to explore participants' perceptions. These names of colors were examined by ColorHexa.com.



**Figure 1: Procedure for modifying the layout of packages**

## **Findings and Discussion**

### **4.1 Findings**

This section reports customers' perceptions toward the colors of Pringles containers, preferences for the colors, and purchasing experiences, drawing upon their questionnaire responses. Six package colors, vivid red, moderate green, vivid cyan, white, vivid orange and dark pink were used in this study.

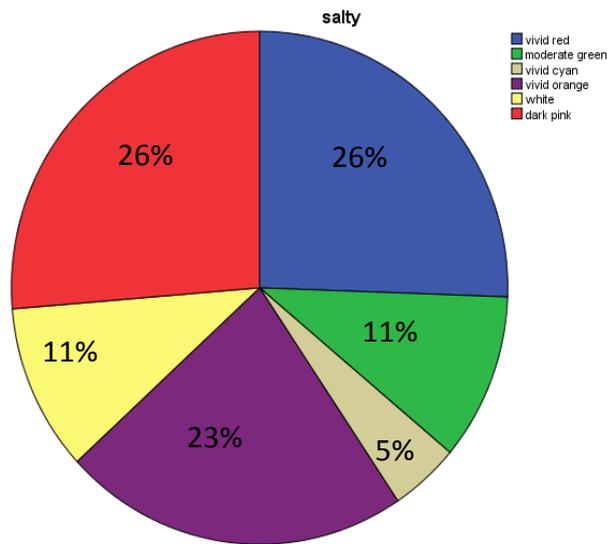
#### **4.1.1 Customers' perceptions toward the colors of Pringles containers**

##### ***Expectation of strong aroma, spicy, sour, and delicious***

When participants were asked which colors would elicit the strong aroma, spicy, and delicious feelings, 44% of participants perceived the vivid orange color has the strong aroma feeling, and followed by the vivid red color about 30% of them. The moderate green color was expected sour by 36% of the subjects, and followed by the vivid cyan color about 26% of them. For the part of spicy feeling, over 60% of participants (90 people) thought the vivid red color elicits the feeling of spicy. For the part of delicious feeling, most of the subjects thought the vivid red and the vivid orange elicit the feeling of delicious, and each color has 48% and 26% of the subjects. Among these expectations there are no gender and age differences.

**Expectation of salty**

As indicated on Figure 2, when participants were asked which colors would elicit the salty feeling, both the dark pink color and the vivid red color have the same amount of participants (26%) been expected salty. Besides, there are 23% of them perceived that the vivid orange color has the salty feeling.



**Figure 2: The color has salty feeling**

As shown in Table 2, there are different results in terms of gender and age. 28% of the female participants perceived the dark pink color has the feeling of salty, but most of the females from 25 to 34 years old chose the vivid red color, and from 45 to 54 years old females thought the vivid orange color is salty. On the other hand, 27% of the male participants thought the vivid orange color is salty, but the dark pink color was chosen by most of the males from 15 to 24 years old.

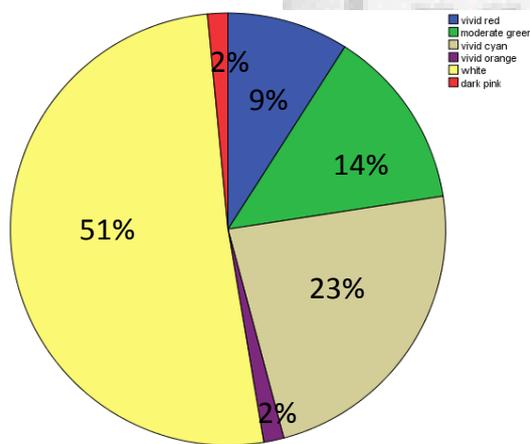
**Table 2: The color has salty feeling among these six colors**

Gender		Age (years old)	Salty					
			Vivid red	Moderate green	Vivid cyan	Vivid orange	White	Dark pink
Female		15-24	0%	13%	6%	19%	6%	56%
		25-34	35%	7%	7%	24%	14%	14%
		35-44	29%	17%	2%	15%	7%	29%
		45-54	22%	11%	0%	44%	0%	22%
		over 55	100%	0%	0%	0%	0%	0%

Gender		Vivid red	Moderate green	Salty			Dark pink	
				Vivid cyan	Vivid orange	White		
	Total	25	12	4	20	8	27	
		26%	13%	4%	21%	8%	28%	
Male	under 14	0%	0%	0%	100%	0%	0%	
	Age (years old)	15-24	17%	0%	0%	25%	25%	33%
		25-34	25%	8%	8%	25%	8%	25%
		35-44	25%	13%	0%	25%	25%	13%
		45-54	67%	0%	33%	0%	0%	0%
	Total	9	2	2	10	6	8	
		24%	5%	5%	27%	16%	22%	

### ***Expectation of mild flavor***

When participants were asked which colors would elicit the mild flavor feeling, 51% of the subjects thought the white color has mild feeling, and followed by the vivid cyan color about 23% of them (see Figure 3).



**Figure 3: The color has mild flavor feeling**

As can be seen in Table 3, in contrast to the male participants, over 50% of the female participants (55 people) expected mild flavor on the white color. At each age group, the white color is chosen by most of them. On the other hand, 38% of male participants thought the vivid cyan color brought about mild flavor feeling, but the white color was selected by most of males from 25 to 34 years old.

**Table 3: The color has mild flavor feeling among these six colors**

Gender		Mild flavor					
		Vivid red	Moderate green	Vivid cyan	Vivid orange	White	Dark pink
Female	15-24	0%	13%	38%	0%	50%	0%
	25-34	7%	24%	14%	0%	55%	0%
	Age (years old) 35-44	12%	10%	10%	2%	63%	2%
	45-54	0%	11%	33%	11%	44%	0%
	over 55	0%	0%	0%	0%	100%	0%
	Total	7	14	17	2	55	1
		7%	15%	18%	2%	57%	1%
Male	under 14	0%	0%	100%		0%	0%
	Age (years old) 15-24	25%	8%	50%		17%	0%
	25-34	8%	17%	8%		67%	0%
	35-44	0%	13%	50%		38%	0%
	45-54	33%	0%	33%		0%	33%
	Total	5	4	14		13	1
		14%	11%	38%		35%	3%

#### 4.1.2 Preferences for the colors

##### *The favorite color which gives rise to desire to purchase*

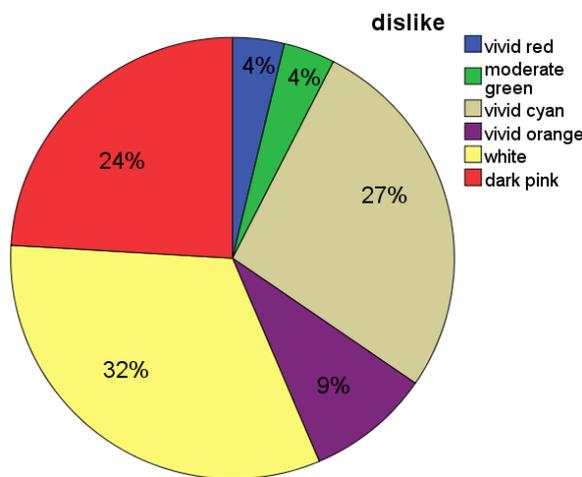
When the participants were asked what their favorite color are among these six colors, most of them like the vivid red color, and moderate green and vivid orange colors are secondary, and followed by dark pink color. The preference for colors does not differ from gender and age.

When the participants were asked which Pringles containers they would pick up unintentionally, the vivid red color was picked up by most of the subjects about 38%, and secondly the dark pink color has about 20% of them. Besides, when looking at these six colors of Pringles, participants were asked which color giving rise to desire

to purchase. The vivid red color gives rise to desire to purchase accounting for 47% of the subjects. The following one is the vivid orange color about 21% of them.

**The dislike color**

When the participants were asked what their dislike colors are among these six colors, the white, vivid cyan, and dark pink colors are the top three disliked colors among these six colors. The white color accounts for 32% of the participants, the vivid cyan covers 27% of them, and the dark pink color about 24% of them.



**Figure 4: The dislike color**

As shown in Table 4, compared with males, females about 34% mainly do not like the white color, while females from 15 to 24 year old (6 people) mostly do not like the dark pink color. On the other hand, for the most part of males about 35% dislike the vivid cyan color, yet males from 35 to 44 years old (5 people) mostly dislike the white color.

**Table 4: The dislike color among these six colors**

Gender	Age (years old)	Dislike					
		Vivid red	Moderate green	Vivid cyan	Vivid orange	White	Dark pink
Female	15-24	0%	0%	25%	25%	13%	38%
	25-34	3%	7%	28%	7%	31%	24%
	35-44	5%	0%	20%	7%	44%	24%

Gender		Dislike					
		Vivid red	Moderate green	Vivid cyan	Vivid orange	White	Dark pink
	45-54	0%	0%	33%	0%	44%	22%
	over 55	0%	100%	0%	0%	0%	0%
Total		3	3	23	9	33	25
		3%	3%	24%	9%	34%	26%
Male	under 14	0%	0%	0%	0%	0%	100%
	15-24	0%	8%	33%	8%	33%	17%
	25-34	17%	8%	50%	8%	0%	17%
	35-44	0%	0%	25%	0%	63%	13%
	45-54	0%	0%	33%	33%	33%	0%
	Total		2	2	13	3	10
		5%	5%	35%	8%	27%	19%

#### 4.1.3 Purchasing experiences

In this section, the participants were asked what kinds of Pringles they had bought among these six flavors. As indicated on Table 5, almost every participant purchased the original flavor because the Pct of Cases number is nearly 100%, and each participant purchased at least three flavors on the average because the Pct of Cases number is nearly 300%.

**Table 5: The purchasing experiences among these six flavors**

	Number	Percentage	Pct of Cases
The original	119	30%	90%
Sour cream& onion	40	10%	30%
Cheddar & sour cream	20	5%	15%
Cheddar cheese	79	20%	59%
Pizza	66	17%	50%
BBQ	73	18%	55%
total	397	100%	299%

## **4.2 Discussion**

### **4.2.1 Perceptions toward six packaging colors**

Findings 4.1.1 reveal that the participants associated the feelings of strong aroma, spicy, sour, and delicious with the vivid orange, vivid red, moderate green, vivid red, respectively. Only the expectations of salty and mild flavors have gender and age differences. The reasons could be that some participants have bought these six flavors of Pringles so they have already known how these six flavors taste like, and some packaging colors could be associated with foods in our daily life such as green color would be associated with a lemon. Therefore, the results of perceptions toward these six colors did not have obvious gender and age differences. As Kaya and Epps (2004) argued, white color tends to be related with purity and being simple and clean, hence the white packaging color may elicit the feeling of mild flavor. As Tai (2013) mentioned, everyone has different perception to colors, and there are some factors influencing feelings on colors such as metal and physical conditions, surrounding colors, personal backgrounds, education, personalities, and constellation. Therefore, it would be interesting to explore reasons why the participants choosing a color.

### **4.2.2 Preferences for six packaging colors**

Findings 4.1.2 reveal that the vivid red and the dark pink colors are the attractive colors among these six colors because the participants would like to pick them up unintentionally. Color will help to attract buyers and differentiate one product from another (Sherin, 2011). Besides, the vivid red color gives rise to desire to purchase. Perhaps the result was influenced by its flavor (the original) because almost everyone has bought it, and we cannot tell what color the original flavor looked like. As Tai (2013) claimed, preference of colors is very subjective, and the causes of liking colors are varying. As Kaya and Epps (2004) pointed out, the red and green colors attained positive responses because red was associated with love and romance. Moreover,

green was associated with nature and tree so creating the feeling of comfort, hence among these six colors, the top three favorite packaging colors involving the vivid red, moderate green, and vivid orange. However, there are no apparent gender and age differences. On the other hand, Kaya and Epps (2004) claimed that reasons given for negative responses to white showed that white elicited the feelings of emptiness and boredom. Furthermore, the reason given for negative response to purple showed that purple was not a favorite color. Therefore, among these six colors, the top three dislike packaging colors including the white, vivid cyan, and dark pink which is similar to purple. Most of the females dislike the white, but most of the males dislike the vivid cyan.

## **Conclusion**

This study aims to explore customers' perceptions toward the colors of "Pringles" containers, and their preferences for packaging colors. Findings are twofold: firstly, the perceptions toward these six packaging colors: the vivid red color brings about the feelings of salty, spicy, and delicious; the moderate green color gives rise to the expectation of sour; the vivid cyan color elicits the mild flavor and sour feelings; the vivid orange color brings about the feelings of strong aroma, salty, and delicious; the white color is expected mild flavor; the dark pink color elicits the salty feeling. Most of participants' perceptions to different packaging colors have no gender and age differences. Secondly, the preference for these six packaging colors: the attractive color is the vivid red and followed by dark pink. Preference of colors is subjective, and the causes of liking are varying. Among these six colors, the top three favorite colors for Pringles containers are the vivid red, moderate green and vivid orange. On the other hand, the top three dislike packaging colors are the white, vivid cyan and dark pink.

Perhaps the results were influenced by purchasing experiences that is some participants might have bought these six flavor Pringles. Therefore, they have already known how these six flavor Pringles taste like. Moreover, the limited amounts of colors for the participants to choose. This study enhances our understanding of the colors of package designs which color may use to attract customers, and the colors would elicit the perceptions, but the idea of perception did not have obvious gender and age differences.

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