A Study on Synchronizing of Visual Design and Taste from Chocolate Form

Ting-Ting Hsu *, Jenn-Yang Lin **, Min-Yuan Ma***

** National Cheng Kung University, tripleting@gmail.com*
*** Nanhua University, jylin@mail.nhu.edu.tw*
*** National Cheng Kung University, mamy@mail.ncku.edu.tw*

Abstract: The material life in nowadays is abundant and even overflowing. The basic living needs of customers have already been fulfilled. What we need in our life become less and less, but to look from the sight of the five senses, then what we want are still plenty. That is why the marketing of products always emphasized what they can make people feel in sight, hearing, touch, taste, and smell. And chocolate, is now acting as an experience of psychical enjoyment instead of foodstuffs of physiology needs. How does a chocolate look, smell, touch, taste, and even its sound of breaking up, all these feeling can make the experience of having a chocolate more delicious and impressive.

The main purpose of this study is to find out the relation between the visual shape of chocolates and the experiential memory of taste. Through literature and marketing survey, we classified the factors of chocolates visual design, including color, shape, surface and decoration, and then sifted the appropriate samples of chocolates for questionnaire. Questionnaire will be the main form to collect the data to help us to understand the preference of chocolates visual design and taste for consumers. The findings indicate that the chocolates with dark colors make us feel bitter, and those with light colors especially the color close to yellow will make us feel much sweeter. And the chocolates shaped smooth and with obtuse angle make us feel sweeter than those shaped upright and foursquare, for example, a diamond shaped chocolate with clear borders always make us feel bitter. And the chocolates with powdered surface make us feel bitter than those with glossy and light reflecting surface. Decorations are the most varied factor in chocolates visual shapes, and those decorated with lines make us feel sweetest, secondly are granulous decorations, and those with few golden powder or without any decoration bring bitter taste of feeling to us.

Key words: Chocolate, Visual design, Taste, Synesthesia

1. Introduction

Chocolates nowadays are not only foodstuffs to satisfy our hunger but also fine works which can pleasure our minds. With the advancement of food science and technology, Chocolate was found to have a high nutritional value, and it also contain the obromine and tryptophan which can make people feeling happy. All these reasons bring chocolates images of health, happiness and enjoyment, and open up the market acceptance of chocolates. Within all kinds of shapes, chocolates can bring us different imaginations of tastes through our experiences and memories. The main purpose of this study is to find out the relation between the visual shape of chocolates and the experiential memory of taste. When we see a chocolate, we always can imagine how the chocolate might taste like

through the experience we had before. Even though we do not really eat the chocolate, we still can create a flavor of the chocolate we see in our brain. So this study is trying to find out the visual and gustatory experiential memories of chocolate for most people.

2. Literature Review

2.1 Chocolate

Chocolate is a product based on cocoa solid and cocoa fat. The U.S. Food and Drug Administration (FDA) regulates the naming and ingredients of cocoa products:

Dark chocolate: There are no milk solids added in dark chocolate. The cocoa content of commercial dark chocolate bars can range from 30% to 70- 80% for extremely dark bars.

Sweet dark chocolate: is “dark chocolate” in the sense that it does not contain milk solids, but it still has a high percentage of sugar and is much sweeter than other types of dark chocolate. Many brands of sweet dark chocolate have only 20-40% cocoa solids.

Milk chocolate: In addition to containing cocoa butter and chocolate liquor, milk chocolate contains either condensed milk or dry milk solids. Milk chocolate must contain at least 10% chocolate liquor, 3.39% butterfat, and 12% milk solids. Milk chocolates are typically much sweeter than dark chocolate, and have a lighter color and a less pronounced chocolate taste.

White chocolate: White chocolate gets its name from the cocoa butter it contains, but does not contain chocolate liquor or any other cocoa products. As a result, it has no pronounced chocolate taste, but commonly tastes like vanilla or other added flavorings. By law, white chocolate must contain a minimum 20% cocoa butter, 14% milk solids, and a maximum of 55% sugar.

According to the classification of FDA, we can found that different proportions of sugar and cocoa bring us different tastes of sweet and bitter.

2.2 Synchronizing of Visual Shape and Taste

People learn about the world through the five senses: sight, smell, hearing, taste and touch, and the five senses interact with each other. Situations are difficult to experience through only one sensory.

The sense of sight means the colors and shapes we see through our eyes, and it occupy a primary role in the five senses. Visual image semantics mainly includes three factors: model, color and material. Modeling is an important aspect for the visual image, mainly through the scale, shape, proportion, and mutual constitute relations with each other to create different visual feelings. Colors including hue, lightness, purity, and different organizational relationships between each other can bring us varied emotions of visions. Color has a profound impact on people's visual perception and psychological feeling. Material refers to the material properties, texture, and texture information transfer, and itself is also an art form. Suitable modeling material or texture can increase the visual quality of product (K. Krippendorf, 1988).

Taste is the sensation produced when a substance in the mouth reacts chemically with receptors of taste buds. Most of the time, the taste interact with other sensory receptors, and complete the feeling together (Robert W.Bailey, 1989). The taste is not always the focus of attention, and it is like background music which can strengthen the effect of recognition instead of creating a recognition (Bernd Schmitt, 1999). But taste is important

for food products. Consumers do imagine the taste of foodstuffs through its visual styling, and that affects their desire to buy.

When someone says “It looks tasty”, that is a kind of synchronizing of visual sight and taste. Even we don’t really taste the food in front of us, we can still imagine the flavor through our experience and memory. Visual feeling plays an important role on food tasting, and it can be used to identify and predict the flavor of food

There are a variety of chocolates on the market, and different kinds of chocolates bring different imaginations of flavors. Some visual styling will make people feel sweet and some will be bitter, and the reason might be its shape, color or even a small decoration on the chocolate. So this study is going to find out the relation between the visual shape of chocolates and the experiential memory of taste.

3. Study Method and Process

3.1 Study Process

Through marketing survey, we collect chocolate samples from brands with online store, and classified the factors of chocolates visual design, including color, shape, surface and decoration, and then sifted the appropriate samples of chocolates for questionnaire. Questionnaire will be the main form to collect the data to help us to understand the preference of chocolates visual design and taste for consumers. According to the questionnaire data, we can analyze the relation between the visual shapes and tastes of chocolates

3.2 Sample of Chocolates

We sieve those chocolate brands which provide online store, and collect these modeling and information of chocolates for classification and analysis. Eliminate the similar samples, we finally have 15 brands and 47 chocolates for questionnaire.

Table 1. Sample of chocolates

1.Galler www.galler.com							
2.Neuhaus www.neuhauschocolates.com							
							
3.Lindt www.lindt.com							
4.godiva www.godiva.com.tw/				-	-	-	

5.E'Z Chocolate www.ez-choco.com.tw/				-	-	-		
6. Valrhona www.valrhonaprofessionals.com					**7.Laderach** www.bernies.tw			
8.Aloha Hawaiian www.alohahawaiianflowers.com					**9.annacocoa** www.annacocoa.com.tw			
10.noble www.noble-ingredients.com					**11.felchlin** www.felchlin.com/en			
12.guylian www.guylian.be/en/home/					**13.Chef Ku** www.grand-hilai.com.tw			
14.visser www.visser-zoetwaren.nl					**15.Ferrero** www.rocher.com.tw			

Through these chocolate samples, we can classify the elements of chocolate visual shapes, including color, model, surface texture and decorations.

3.3 Questionnaire

There are 40 subjects in the questionnaire during age of 15-30 years old, 20 males and 20 females. In the questionnaire we provide the images of the 47 chocolate samples, and use the semantic differential scale for subjects to judge the taste of the sample. According to the classification of FDA and suggestion of experts, we integrate the taste of chocolates into "bitter" and "sweet", and use the two opposing feeling of taste experience for the five levels of scale, including “very sweet”, “sweet”, “no feeling”, “bitter” and “very bitter”.

Figure.1 Questionnaire sample

4. Discussion and Conclusions

Compile statistics of the questionnaire, we can see the tendency of taste feeling for each sample. The following we are going to compare those samples which tend to “sweet” or ”bitter”, to know if there are some visual elements in common between each other.

4.1 Very Sweet

From the statistics of the chocolate samples which make people feel “very sweet”, we can see all the white chocolates are collected in this section. Besides white chocolates, most chocolates in this section tend to colored khaki. The samples with light colors gather here, it shows that color is an important element for people to determine the taste. The shapes here tend to be soft, rounded and with no acute angle. The surface texture tends to smooth. At the decoration part, we found that all the samples with the decoration of lines make people feel sweeter, no matter what shapes or colors they are.

Table 2. The rank of “Very Sweet” chocolate samples

Rank	**1**	**2**	**3**		**5**	**6**	**7**	**8**	**9**	**10**
No	C24	C26	C27	C28	C09	C40	C8	C47	C13	C19
Sample										
%	80%	77.5%	72.5%		67.5%	65%	62.5%	50%	47.5%	45%

4.2 Sweet

In the “sweet” section, we can see the colors are darker than the “very sweet” ones. The shapes are various without similar element. The surface texture here also tends to smooth and with a little light reflecting. Most of the chocolate samples here are decorated with particle elements, and we found that the bigger the particles are, they make people feel much sweeter.

Table 3. The rank of “Sweet” chocolate samples

Rank	**1**	**2**	**3**	**4**	**5**		**7**			
No	C20	C30	C29	C35	C15	C21	C5	C34	C41	C44
Sample										
%	80%	67.5%	62.5%	60%	57.5%		55%			

4.3 Bitter

In the section of “bitter”, besides the first three samples, the colors of the others come to be much darker than the previous ones. The shapes here are simple spheres or cubes without complicated details, and the edges are clear and sharp. From first three samples we can find that the chocolates with cocoa powder certainty make people feel bitter and pure. Most of the samples here has no decoration, but within more surface texture. For chocolates always bring us the tasting of sweet, the statistical rates in the “very bitter” part is relatively low, so we are temporarily not going to discuss that section.

Table 4. The rank of “Bitter” chocolate samples

Rank	**1**	**2**	**3**	**4**	**5**		**7**	**8**	**9**		
No	C2	C37	C7	C32	C33	C45	C4	C1	C16	C23	C31
Sample											
%	62.5%	57.5%	50%	37.5%	35%		32.5%	30%	27.5%		

4.4 Conclusions

From the discussion above, we can organize the visual elements for the taste of chocolates. Those chocolates with the color white and khaki might make people feel too sweet, and the darker the color is, the bitter flavor is imagined by subjects. Compared with those shaped into soft and rounded models, simple spheres or cubes with clear and sharp edges make people feel bitter. The decoration part, those decorated with lines make people feel most sweet, the second one are those with particles. If there are particle elements on the surface, the bigger the particles are, the sweeter the people feel. And those decorated with small area or no decoration bring bitter feeling of taste.

Through the questionnaire we also found that people prefer bitter taste of chocolate, and most of the visual shapes of chocolates make them feel too sweet and might reduce the appetite. This study organized the visual elements for chocolate development, hoping the visual shapes of chocolates will conform to the expectancy of taste for most consumers.

5. Citations

[1] Chantal Coady (2002) *The Chocolate Companion – A Connoisseur's Guide*, Wan Li Book, Taipei.

[2] Harold McGee (2004) *On Food And Cooking: The Science and Lore of the Kitchen*, Simon & Schuster, New York.

[3] TAKU SATOH (2012) *Spraying Whale*, Faces Publishing LTD, Taipei.

[4] Jiang Ding-Yu (2009) *Introduction of Psychology*, Five Southern Publishing, Taipei.

[5] Lin Ping-Chang (2009) *Modeling Principles*, Chang Hua Publishing, Taipei.

[6] Pun Ling-Ling (2005) *I Love Chocolates*, Rolling Stone Culture, Taipei.

[7] Zhao Shih-Hhang (2011) *Intelligent of Taste,* Shi-Tsai Culture Co. Ltd, Taipei.

[8] Lu Fu-Niang (2010) *Research of Chocolate Packaging Visual Design sense and Taste*, Thesis of National Taiwan University of Arts, Department of Visual Communication Design.

[9] Sun Jia-Xin (2007) *Research of Food packaging bottle shape and Taste*, Thesis of National Taiwan University of Science, Institute of Design.