

Research Article

The Application and Psychology of Color in Food Packaging Design

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Abstract: Food packaging design plays an essential part in packaging field. The quality and level of food packaging design from one side can reflect the social development in a country. Food packaging design is an indispensable procedure in the process of food packaging, which has a direct influence on the sales volume of product. In the study, color as the most visual expressive designing language in food packaging, is able to satisfy people's different psychological feelings, such as soft and hard, taste. With the improvement of aesthetic level in food packaging of people, food manufacturers are supposed to highlight the color design in food packaging.

Keywords: Color, food packaging, packaging design, psychological effect

INTRODUCTION

Food packaging is of great significance in the packaging field. And whether food packaging design is good or bad always determines if the product is popular or not. The color of packaging can embody spirit with food packaging, catch attention of customers, evoke their desire to buy and stimulate their purchasing behavior so that it can increase the sales volume of the product and mould successful brand image. So we can draw a conclusion that color psychological effect is indeed decisive in the design of the food packaging. Packaging has several objectives.

Physical protection: The food enclosed in the package may require protection from, among other things, shock, vibration, compression, temperature, bacteria, etc.

Barrier protection: A barrier from oxygen, water vapor, dust, etc., is often required. Permeation is a critical factor in design. Some packages contain desiccants or oxygen absorbers to help extend shelf life. Modified atmospheres or controlled atmospheres are also maintained in some food packages. Keeping the contents clean, fresh and safe for the intended shelf life is a primary function.

Containment or agglomeration: Small items are typically grouped together in one package to allow efficient handling. Liquids, powders and granular materials need containment.

Information transmission: Packages and labels communicate how to use, transport, recycle, or dispose of the package or product. Some types of information are required by governments.

Marketing: The packaging and labels can be used by marketers to encourage potential buyers to purchase the product. Package design has been an important and constantly evolving phenomenon for several decades. Marketing communications and graphic design are applied to the surface of the package and (in many cases) the point of sale display.

Security: Packaging can play an important role in reducing the security risks of shipment. Packages can be made with improved tamper resistance to deter tampering and also can have tamper-evident features to help indicate tampering. Packages can be engineered to help reduce the risks of package pilferage; some package constructions are more resistant to pilferage and some have pilfer-indicating seals. Packages may include authentication seals to help indicate that the package and contents are not counterfeit. Packages also can include anti-theft devices, such as dye packs, RFID tags, or electronic article surveillance tags, that can be activated or detected by devices at exit points and require specialized tools to deactivate. Using packaging in this way is a means of retail loss prevention.

Convenience: Packages can have features which add convenience in distribution, handling, stacking, display, sale, opening, reclosing, use and reuse.

Portion control: Single-serving packaging has a precise amount of contents to control usage. Bulk commodities (such as salt) can be divided into packages that are a more suitable size for individual households. It also aids the control of inventory: selling sealed 1-L bottles of milk, rather than having people bring their own bottles to fill themselves (Bässler and Lehmann, 2013).

In the study, color as the most visual expressive designing language in food packaging, is able to satisfy people's different psychological feelings, such as soft and hard, taste. With the improvement of aesthetic level in food packaging of people, food manufacturers are supposed to highlight the color design in food packaging.

MATERIALS AND METHODS

This study applies color composition, chromatics, color psychology and some other related theory and methods in a comprehensive way to do research on the application of color and color psychology in food packaging design, which can provide helpful materials and reference for practice of food packaging design.

Psychological effects of color: People's mental activity is a very complex psychological process. It consists of feelings, consciousness, thought and other forms. Color having visual recognition can influence people's psychology, feelings and even decide their emotions and mental states, which we can call it the change of emotions (Jin *et al.*, 2005). As for the essence of color, it is just substance and insensible. However, people has feelings on color and gained a lot of experience on color, it gradually effects people's psychology and different people have different reactions to different color. As a result, designer should have a clear understanding about the emotional expressions each color has before doing the color design. Knowing the psychological meaning of every color can make full of the color appropriately and attain the result with half effort.

Psychological feelings of color: Supposedly there are two soft and sweet cakes with the same texture. One of the cake's package is painted with steel blue and dark brown without any thoughts and design, on the contrary, the color of the other cake's package is filled with pink, creamy white which easily makes customers think about sweet flavor and softness in a vision way. The only difference between these two products is the color of the package. But there is no doubt that which product is much more popular. Different colors can give different psychological feelings and hint to customers, such as sense of warm and cold, sense of soft and hard, sense of taste and the imagination with color. The above senses are all psychological reactions held by customers after they see different colors. Through investigation and survey, we can find that customers in our country have already increased their self-awareness of the color of the food packaging. Teenagers and young man customers often get to know a product by looking at the color of the food packaging, especially for unfamiliar products. So if the design of the color of the food packaging is in a mess, it is easily



Fig. 1: Red, the longest light wave, produces the forwarding feelings in this picture



Fig. 2: The comparison of forwarding feeling and receding feeling between yellow with high lightness and blue with low lightness

thought as the same with inferior products. But if customers are attracted by its color of the product, most of them would like to try to purchase it, they are even willing to pay some "food packaging fees" for the food package they love. Let's analyze it in details and in order.

Distance sensation: The length of light wave varies in every color. So do the image reflected by the retina. Normally, we call the color with longer light wave and the color which can produce forward and swelling feelings on the vision as advancing color; we call the color with short light wave and the color which produce back and shrinking feeling on the vision as receding color. On the aspect of hue, red and yellow have the longer light wave, which gives the forward feelings; Fig. 1. Blue and glaucous have the shorter light wave, which gives the back and receding feelings. As for the lightness aspect, color with high lightness is advancing color; color with low lightness is called receding color. Figure 2 on the part of purity, bright-colored color has the advancing, swelling feelings; low purity has the receding and shrinking feelings. In the process of designing food package, we should full consider the relationships between background of product package and the subject. Color matching is not the only factor we are considering, it is more important to use the distance sensation to let the color of package serve the subject in a better way so that increase the visual effect of the product (Li, 2007).



Fig. 3: The comparison of the application of yellow with high lightness and green with low lightness in the food



Fig. 4: Chocolate that is embodied with mellow and rich feeling



Fig. 5: The hotness that the red space brings



Fig. 6: The coolness that the blue space brings

The sense of soft and hard: Faint yellow, white remind people think about soft and sweet cake and smooth creamy; tawny, brown let people associate with crisp and hard chocolate or kinds of nuts. Different lightness remind people think of various foods with different soft and hard. That is, we call, the soft and hard embodied by color. The major factor influencing the sense of soft and hard is lightness and purity. The higher the lightness is, the softer the products looks like. The lower the lightness is, the harder the product looks like. So color with low purity looks softer than color with high purity Fig. 3. We can put the high lightness and low purity colors in order and use them in the food package which tastes soft as the decoration,

while putting low lightness or high purity color in order to express the food which tastes crisp and hard.

Sense of taste: Sense of taste is got through building relation between human beings' long-term living and observation of the color of the objects (Lv, 2007). For instance, people relate chocolate with the taste of mellow and rich. The color of chocolate is known by chocolate, which means that people give the representative after tasting chocolate. Figure 4 in general, the taste of the packaging cover mainly include sour, sweet, bitter, spicy, salty. Generally speaking, yellow, white and red tends to be embodied with sweet taste stimulation; blue, cyan and green tends to be embodied with sour taste stimulation; Black, gray and dark brown are the representative color of bitter taste. Red is the representative color of spicy; Black, cyan and white are the representative color of salty. Appropriate application of color brings the psychological feeling of taste to the customers and means plenty to the color design and application of food packaging. It is able to represent exactly the characteristics of taste of the packaging objects, highlight the selling points of the products, intensify the brands' characteristics of the products and stabilize the products' image. Therefore, we are supposed to know and grasp the psychological feeling of taste in color.

Sense of warm and cool: If living in the environment of bright red, people would feel hot and annoyed; even the skin effect would appear-sweating Fig. 5. Being in the environment of same environment, if change red to blue, people would feel cool and relaxed during a long period of time and even the people's skin temperature would in a slight decline, which is the psychological feeling that the sense of warm and cool brings Fig. 6. Any colors are embodied with the feeling of warm and cool. For the colors that relatively bring sense of warm, we can name it as warm color, such as jacinth and orange yellow; For the colors that relatively bring sense of cool, we can name it as cool color, such as navy blue and cyan. In most cases, warm colors contain more ingredient of yellow, yet cool colors contain more ingredient of blue. Cool colors make people associate sea, snow mountain, etc.; Warm colors make people associate sun and big fire, etc. In food packaging, warm color will make consumer feel joyful and have appetite; Cool color will make consumer feel pleasantly cool and pleased.

Association of color psychology:

Subjective association of color: Subjective association of color means that in real life, different people subjectively endow the colors with certain definitions and natures according to their own living habit and custom (Chen and Huang, 2002). Although the definitions are not inherent of the colors, yet in certain

conditions and after long-term application, people will unconsciously relate the definitions and colors and embody the colors with certain symbolic meaning. For example, white is the representation of failure and depression; Gold is the representation of authority and dignity. However, the representation of color is not simple, it can be complex. For instance, orange represents both sweet and warm and testiness and doubt. Green represents both freshness and nature and normality and meanness. Some of the food's cover design follow others and even copy others' color, or some of the food's cover is too realistic, in disorder color and with no main color, which cannot present the brand's characteristic and be distinguished from other similar products. It's impossible to attract the consumers. "Design is a subject which is closely related to people's needs (Zhang, 2002)." Packaging color brings both delightful feeling to the consumer in vision and satisfy them in spirit. The application of natural colors gives people hints of health and nutrition; Bright colors make people feel sweet and juicy, which are the wonderful "magic" that color design brings to the food packaging. Under the influence of "magic", consumers can sense the comfortable choosing environment in vision and high-quality life, which are the final target of food packaging design-serve consumers and this is also the final pursuit of packaging designers.

Objective association of color: Objective association of color refers to the mental activity that associates the observed colors with the relevant objects. objective association of color can be divided into concrete association and abstract association. Concrete association refers to relate the observed color to the concrete objects. For instance, people associate white with sugar, salt and milk; Associate green with vegetable and mung bean. Abstract association refers to the non-objective association that colors bring to people the smell, taste and other relevance, for example, the bright and lively pink, orange-yellow and jacinth tend to make people relate to appetizing and sweet in smell and taste; Faint yellow and white easily make people associate to soft and smooth taste; Green make people feel fresh, tasty, rich in nutrition and so on.

The symbolic application of color: Under numerous repetition, the association of color almost has fixed its exclusive color of manifestation. As a result, the color turns to the representation of the object. Color is endowed with different symbolic meanings concerning different countries, nationalities, religions, regions, genders, manners and customs, cultural levels and ages. For example, red represents sun, warmth, passion; In China, it represents auspicious and joyous and also refers to revolution. In packaging design, designers should understand the symbolic meaning of the

products and fully adapt it the colors in the packaging design.

RESULTS AND DISCUSSION

Food packaging industry is the high-value member in the packaging field. The food packaging standard of a country can reflect the social development of the country. As the most expressive design language in vision-color, is able to bring different mental feelings to people, like soft and hard and smell, etc. As the improvement of the consumers' aesthetic standard of the color of food packaging, the manufacturer should also pay more attention on the design of packaging design.

CONCLUSION

The application of color design and the manifestation of the color psychology are of great importance in the food packaging design. The final goal of the food packaging design is to satisfy customers' needs. With the development of the living standard of people, people put more emphasis on the health of eating and using. How to coordinate manufacturers to own more market share effectively, designers need to take the market into full considerations, carry out a survey and do the research on the characteristics and many other factors of the products. In conclusion, psychology effects, psychological feelings and psychological imagination from color to the customers are needed to be fully considered while in the practical designs.

ACKNOWLEDGMENT

I'm sincerely grateful for the teachers, colleagues and students in Donghua University and Dalian University of Foreign Languages. Thanks for their providing of precious document and image materials.

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