Effects of Visual, Taste and Olfaction on Food Decision-Making

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ABSTRACT

After the visual feedback, tasting by tongue and the perception on aroma, olfaction plays a part in cuisine before, after or during eating. Flavor has been derived based on the sensory effects of visual, taste and olfaction. For Chinese cuisine, the flavor is an effective indicator of judging whether or not the customers will enjoy delicious and good food, having a direct impact on the evaluation of Chinese cuisine. Consequently, the purpose is to understand and grasp the customer’s sensory recognition, the stimulating effects of visual, taste and olfaction and to turn the quality specifications or requirements of good food. After an internal training, the requirements of customers on what is delicious food for them are redefined, which is the main purpose and major contribution of this paper. Through conducting a survey and random sampling after meals, the customers are invited to answer the questionnaires. There were 98 valid questionnaires. This paper adopts the independent sample t test and other statistical programs such as the SPSS 21.0 data analysis tool to analyze how the customers of different genders choose the delicious food through taste and olfactory perceptions. The research results can be adopted to verify the visual, taste and olfactory functions and can be used as an operational process to understand these functions and their influence and effectiveness.

Keywords: Visual; Taste; Olfaction; Decision-making on Delicious Food

INTRODUCTION

Chinese cuisine has always been limited by the characteristics of cultural heritage and dining habits. The so-called delicious food will emphasize color, fragrance, taste, meaning and shape, diners enhance their external visual experience into internal joy and satisfaction (Wang, 2015; Kringelbach, 2015). In short, Chinese cuisine is the essence of the visual with the emphasis on color, shape, material, implications and spatial arrangement (Wang, 2015), color, shape, material come from visual feedback and the functions of olfaction and taste come from the combined function of olfaction and taste.

The combined function of olfaction and taste systems forms a unique flavor (Shepherd, 2006; Small et al., 2004). The customer emphasizes on flavor during the process of tasting food aside from the visual aspect. How do visual, olfaction and taste form the combined function? Few studies explored this. In order to carry out the purpose of this research, the author illustrates and offers a conceptual definition to the so-called flavor system, mainly through the function of visual, olfaction and taste. During meals, the appropriate arrangement of food can satisfy the olfactory and taste feedbacks and finally leaves pleasant experience and memories.
LITERATURE REVIEW

Visual Effects of Chinese Cuisines

The process of placing ornamental items and ingredients alongside food items has a long historical and cultural origins (Hogenkamp, Stafleu, Mars, Brunstrom, & De Graaf, 2011; Woods et al., 2011). There are various reasons for doing this, one of which is definitely right, this ingenuity mainly comes from the design of the chef, hoping that the food can produce harmony and balance, and attract the customer's attention. In other words, the eyes always enjoy the food first (Spence, Levitan, Shankar & Zampini, 2010) because they form pleasant expectations for customers and transform them into other sensory feedbacks, acquiring pleasant and joyful memories after meals. The effects are successful and significant; even the atmosphere has an impact on world-class restaurants which have been devoted to the integral dish artistry and aesthetic (Deroy, Michel, Piqueras-Fiszman & Spence, 2014).

Flavor System of Chinese Cuisines

The reason why food can give people a sense of delicacy is mainly due to the differences between aroma molecules in the taste buds. These differences are processed by the brain and synergize into the flavor through olfactory and taste functions. Olfaction plays a key role in recognizing the delicious food. Although some studies show that olfaction gradually degenerates in human development. Consequently, vision plays a major part in deciding what a delicious food is. However, some studies show that olfaction is the main sense in determining a delicious food. Many customers have wonderful memories related to delicious food, most of which come from the memories of food flavor. The sources of this function have been called as flavor system.

The main effects of the flavor system on selecting Chinese cuisine are explored through the two main pipelines. One is the nasal cavity, known as orthonasal olfaction and the other is from the mouth and pharynx, known as retronasal olfaction. The former mainly detects the outside aroma, which is the scent of delicious food and the latter is realized through the detection of smell in the mouth through retronasal olfaction. Research illustrates the significance of retronasal olfaction and the common way to know this is to pinch the nose to taste the acid, sweet, bitter, salty or fresh. As long as the olfaction is functional, we can immediately feel the rich flavors of food. That is why tasting a delicious food can be tasteless when one has a cold or feel stuffy (Lim & Johnson, 2011).

When the aroma of the food is felt by the mouth, we mistakenly feel that the aroma comes from taste rather than the smell. However, in fact, the aroma of cuisine comes from the oral cavity. In other words, it is the nose that feels the scent of this cuisine (Lim & Johnson, 2011; Murphy & Cain, 1980). However, to judge whether or not this cuisine is delicious comes from the interaction between the olfaction and taste, in which we can tell the relatedness of these two functions. Another research shows that sugar from the cherry juice or vanilla or sauces creates a richer aroma experienced by customers on the food (Green, Nachtigal, Hammond, & Lim, 2012). The aroma of ham, however, made the subjects feel salty (Seo et al., 2011). The research results show that when the aroma from the nasal passage is consistent with the taste, For example, vanilla aroma - sweet, lemon aroma - acid, soy sauce aroma - salty, coffee aroma - bitter, chicken aroma - fresh, the olfaction will naturally enhance the intensity of the sensation. In other words, the olfaction and taste have multiplying effects.

In summary, the so-called flavor system consisted of the aroma experienced by customers during meals, regardless of the orthonasal olfaction and retronasal olfaction. As a result, the flavor system in this study is at least consisted of combined multiple sensations of visual, olfaction and taste.
RESEARCH DESIGN

Through conducting a survey, this study adopts random sampling to invite customers to answer questionnaires after their meals. The questionnaires were sent from April 1 to June 30, 2016. There were 200 questionnaires sent out, in which 113 of them were returned and 98 were valid after deleting the invalid and incomplete ones. The ratio of valid questionnaires is 49.00%. After collecting the data, this study adopts the SPSS 21.0 as the data analysis tool to explore how consumers of different genders make a decision based on olfaction and taste, and understand the role and significance of three sensory organs in the decision-making process related to the flavor system.

Research Results and Discussion

Initial research shows that the subjective feeling of customers towards a delicious food comes from the first visual impression and there might have a slight difference between genders. Females have relatively better visual, olfactory and taste perceptions than their male counterparts. Females have significant olfactory perceptions than males. The visual effects and scent of cuisines have significant enhancing effects. Under the stimulus of the taste system, customers of different genders have a significant difference in decision-making when evaluating a delicious food, in which males have relatively better taste and females have better olfaction. Please refer to the table 1 appended below.

Table 1: t test for gender

<table>
<thead>
<tr>
<th>dimension</th>
<th>male mean</th>
<th>Standard deviation</th>
<th>female mean</th>
<th>Standard deviation</th>
<th>t</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visual</td>
<td>4.94</td>
<td>.506</td>
<td>4.48</td>
<td>.629</td>
<td>5.90</td>
<td>.000**</td>
</tr>
<tr>
<td>Olfactory</td>
<td>4.09</td>
<td>.747</td>
<td>4.47</td>
<td>.663</td>
<td>-4.049</td>
<td>.000**</td>
</tr>
<tr>
<td>taste</td>
<td>3.76</td>
<td>.933</td>
<td>3.87</td>
<td>.748</td>
<td>-.937</td>
<td>.349</td>
</tr>
</tbody>
</table>

* * p< .05  ** p< .01

After the visual effects, most customers smell the food for second confirmation. The olfaction accepts the food and leads to the urge to taste it. Consequently, this study found that there are at least three customers who used this process in their decision-making and judging process. Generally speaking, the order is visual, olfaction and taste. Please refer to the table 2 appended below.

Table 2: ANCOVA by gender x service type

<table>
<thead>
<tr>
<th></th>
<th>SS</th>
<th>DF</th>
<th>MS</th>
<th>F</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>145.28</td>
<td>1</td>
<td>144.28</td>
<td>8.48</td>
<td>.006**</td>
</tr>
<tr>
<td>Service type</td>
<td>185.49</td>
<td>1</td>
<td>186.49</td>
<td>9.75</td>
<td>.002**</td>
</tr>
<tr>
<td>Gender x service type</td>
<td>93.25</td>
<td>1</td>
<td>93.25</td>
<td>5.48</td>
<td>.014*</td>
</tr>
<tr>
<td>Error</td>
<td>799.84</td>
<td>95</td>
<td>16.88</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>58495.00</td>
<td>98</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* * p< .05  ** p< .01

Therefore, the taste system referred in this study refers to the scent of the external environment the customers experienced or the aroma of the mouth, the olfaction. At the same time, it also contains the scent of the food and the flavor confirmed by tasting and the chewing process through the retronasal olfaction. In one word, the taste system is the combined perceptions from multiple sensory organs of visual, olfaction and taste. The related conclusions can be adopted for subsequent studies and can be used as a reference for restaurants.
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REFERENCES


