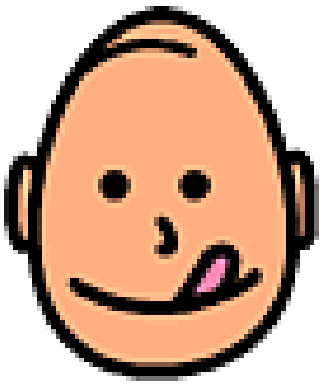

Food Sensory Evaluation Experiment Lecture and The Experiment Report

Food Science and Technology

Jiangnan University

Name： _____

Class： _____

Experiment 1 Threshold Test

1. Experiment purpose：

Threshold, including absolute and difference threshold, is an important index to value the sensitivity of assessors. It is a key method to selected and train assessors. The main aim of this experiment was to know the absolute threshold well meanwhile measured the absolute threshold to sourness of assessors.

2. Experiment procedure：

1. Weigh accurately 0.0500, 0.1000, 0.1500, 0.2000, 0.3000, 0.4000, 0.5000 g citric acid to 100mL beaker，respectively. Dissolved with distilled water and transfered it to 1000 ml volumetric flask to get an constant volume with several timeswashing the beaker.

2. Poured 10 ml of the solution which was prepared in 1000 ml volumetric flask to each tasting cup that has been numbered, the sample number using three-digit encoding, encoding by the test staff to develop and record, confidential.

3. Place the sample cups to a tray in a random order, containing different concentrations of citric acid solution and a coded pure water sample cup, and place in a 350ml pure water cup (filled with purified water) as a mouthwash.

４． Put the tray into the sample port when the assessors sit in their respective positions. the assessor need to taste and fill out the questionnaire.

Threshold Test

The sample you received is a series of samples of the same taste. The samples are arranged in increasing depth. First rinse with water to familiarize yourself with the water. Please do not swallow the sample.

Taste the first sample, then the second, then sample the back of the sample. Do not repeat the sample you are trying to taste, not to taste the samples you have tasted before.

Use the following numbers to indicate the intensity you feel. Please fill in the middle column with your sense of taste (permission to use the "astringent" description of the sample).

0 ： Tasteless or similar taste samples

1 ： very weak

2： Different to water, but do not know what flavor

3 ： Significant (moderate intensity)

4 ： strong

5 ： very strong

Sample number	Taste (and mouthfeel)	strength

Experiment 2 Difference Tests

1. Experiment purpose:

Difference test is a multi-used test in sensory science. It can be used to test if there is significant difference for the products when the material or formula is changed or during the storage of shelf life. It is a sensitive method, which will be not suitable when the difference of sample is obvious. This experiment expects students to get hang with the design of tests, know about the mistake in tests as well as how to analyze the test results.

Compare and grasp four usual difference tests: paired comparison test, duo-trio test (balanced reference and constant reference), Triangle test, and to judge if there is significant difference between different juice sample.

2. Experiment procedure

Two students form a group, and prepare sample for each to test. Each student prepare the samples of two kinds of test for the other to taste.

Attention: during the preparation, one must make sure the exact answer.

A. Paired comparison

1.Put the sample into 4 cups which have numbered with three-digit codes. Experimenter keep the code for secret.

2. Put the cups into a tray, make 4 cups pairs in pairs and one tray has two pairs. Besides, put a 350ml cup of pure water on the tray for gargle.

3.After the assessor sit on the site, send the tray by the entrance, and the assessor will taste and finish the questionnaire.

4. After the test, assessor will analyze the test result.

B. Constant reference duo-trio test

1.Put the sample A and B into cups which have numbered with three-digit codes. Experimenter keep the code for secret.

2.Identify the sample A as reference and put a cup of it on the tray, then put another cup of A and B and the order is random. Besides, put a 350ml cup of pure water on the tray for gargle.

3.After the assessor sit on the site, send the tray by the entrance, and the assessor will taste and finish the questionnaire.

4. After the test, judge the result of every test, and one pair of assessors statistics the data and calculate the significance.

C. Balanced reference duo-trio test

1.Put the sample A and B into cups which have numbered with three-digit codes. Experimenter keep the code for secret.

2.Identify one sample as reference and put a cup of it on the tray, then put another cup of A and B and the order is random. Totally, the probabilities of two sample as reference need to be same. Besides, put a 350ml cup of pure water on the tray for gargle.

3.After the assessor sit on the site, send the tray by the entrance, and the assessor will taste and finish the questionnaire.

4. After the test, judge the result of every test, and one pair of assessors statistics the data and calculate the significance.

D. Triangle Test

1. Put the sample A and B into cups which have numbered with three-digit codes. Experimenter keep the code for secret.

2. Put three cups into a tray, two are A and the other is B, or two are B and the other is A. The frequency of every sample put in every site need to be same while the whole frequency that each sample appears during the test need to be same. Besides, put a 350ml cup of pure water on the tray for gargle.

3.After the assessor sit on the site, send the tray by the entrance, and the assessor will taste and finish the questionnaire.

4. After the test, judge the result of every test, and one pair of assessors statistics the data and calculate the significance.

The data analysis in the experiment report should contain:

1. Calculate the accuracy of A/B/C/D tests, and analyze the differential significance (according to the appendix table).

2 Among these methods, which one is more efficiency, which means easier to detect the difference?

3 If the experiment need to improve, which aspect it will be?

Appendix: The data analysis reference table

1.Paired comparison

	The least number of participants that different significant degrees need		
The number of answers	a≤0.05	a≤0.01	a≤0.001
17	13	14	16
18	13	15	16
19	14	15	17
20	15	16	18
21	15	17	18
22	16	17	19
23	16	18	20
24	17	19	20
25	18	19	21
26	18	20	22
27	19	20	22
28	19	21	23
29	20	22	24
30	20	22	24

2. Constant/ balanced reference duo-trio test

	The least number of participants that different significant degrees need		
The number of answers	a≤0.05	a≤0.01	a≤0.001
17	13	14	16
18	13	15	16
19	14	15	17
20	15	16	18
21	15	17	18
22	16	17	19

23	16	18	20
24	17	19	20
25	18	19	21
30	20	22	24
35	23	25	27

3. Triangle Test

	The least number of participants that different significant degrees need		
The number of answers	a≤0.05	a≤0.01	a≤0.001
17	10	11	13
18	10	12	13
19	11	12	14
20	11	13	14
21	12	13	15
22	12	14	15
23	12	14	16
24	13	15	16
25	13	15	17
26	14	15	17
27	24	16	18
28	15	16	18
29	15	17	19
30	15	17	19

Experiment 3　Texture Profile Analysis

1. Experiment Purpose

Texture profile analysis is a useful method of descriptive sensory evaluation. It is a designing experiment, the aim of which is to guide the students understand the main procedure and method of descriptive sensory evaluation and learn the standardized language training for evaluators by discussion or preliminary test according to the given product. In this designing experiment, the students are expected to understand the main procedure and method of descriptive sensory evaluation and grasp the method of statistical analysis of experimental data and report writing.

2. Experimental Procedure

1. The assessors decide the kind of food to be quality analysed by discussion;

2. By considering the budget, decide the kind and quantity of food needed to buy. And decide the leader and assignment of responsibility of the group;

3. The assessors preliminarily taste the food and discuss the adoptive descriptive language. Finally, the descriptive vocabulary list is determined by the leader and the members need to be agreed on the evaluation indexes and the definitions of them.

4. Determine the standard samples and the corresponding strength value by group discussion. The group is trained to make sure that all of the members can understand the term and the expression of the strength.

5. The assessors evaluate the final selected samples(4-5 kinds), and make quality analysis of them, getting the data and analysing. During the experiment, the members divide the labor and finish the task.

6. Finish the experiment report by analysing and understanding the data.

The data analysis in the experiment report should contain:

1. The established attributes need to be showed after classifying, in order to finish that, form can be used;

2. The process of establishing the table of descriptive vocabulary, for example, the ordinary vocabulary of each evaluation and the process of selecting to get the final vocabulary table;

3. Present the level of the evaluators by data analysis, including the consistency, repeatability, discernibility between different samples;

4. Present the difference of the attributes of different samples through spider diagram, and figure out the attributes which show significant difference between samples.

Experiment 4　Quantitive Consumer Test

1. Experiment purpose：

Consumers quantitative testing is one of the consumer tests which is consumer tests results of quantitative method. Through these tests, we can get from data analysis of consumers' preferences for a product and consumer preferences on the reason of the inquiry. Through different methods of quantitative consumer tests, students build their understanding of the preference overall framework and master how to do quantitatively consumer tests correctly and effectively. At the same time,they also master how to analysis quantitatively consumer tests data.

2. Experiment procedure：

Divided into four parts: two parts do the home test which call the consumer to test in dorm; The other two parts will do central point test such as in the lab.Every group students will do the three quantitatively consumer tests: 9-point hedonic scale、just-about-right (JAR) evaluation method and purchase intent method.

1.Every group students purchase goods(choose and buy three-four kinds different samples), total of 15-20 test quantity of consumers.

2.Each group of students design different scale in three different methods:

A. 9-point hedonic scale

Like extremely/like very much/like moderately/like slightly/neither like nor dislike/dislike slightly/dislike moderately/dislike very much/dislke extremely

B. just-about-right （JAR）evaluation method

Determine its typical characteristics of suitability according to the product:

Scale range: -2,-1,0,1,2

Sweetnees,namely:

-2- Definitely not sweet enough; -1 Somewhat not sweet enough; 0- Just about right

1-Somewhat too sweet; 2-Much too sweet

Sourness, namely:

-2- Definitely not sour enough; -1 Somewhat not sour enough; 0- Just about right

1-Somewhat too sour; 2-Much too sour

C. Purchase intent test

1 2 3 4 5 6 7 8 9

The most unlikely The most likely

3. Each group of students recruit 15-20 consumers in different locations, carry on the above three kinds of experimental tests and collect the data.

4. Select the appropriate analysis method according to the data propertities of each method and analyz, and analysis and finally complete experiment report.

The data analysis in the experiment report should contain:

1.Purchase intent and 9-point hedonic method: adopte the histogram, show the proportion of each scale selection, each product preference , the mean of purchase possibility

2. JAR scale is the attribute of each product and calculate the average to find the most suitable products.

3. By comparing the data of different test conditions, find out the influence of different test environment test for quantitative consumers;

4. Analysis the preference of different products, the JAR data and purchase possibility combining with the three methods of data, to determine whthere there is a obvious correlation among these

Experiment 5　Qualitative Consumer Test

1. Experiment purpose：

Qualitative consumer survey is the study of the object from a qualitative point of view for scientific abstraction, theoretical analysis, conceptual understanding, etc., but not to study quantitative testing.This kind of test mainly have the focus group discussion and so on.This experiment is mainly used to stimulate students' study interest,After drawing up the topic, students carry on the experiment design.Use the questionnaire first and then select the focus group interview to obtain the topic to collect more information. Finally make a summary and write a report.

2. Experiment procedure：

1. The students are divided into groups of 4 to 5 per group and determine research topic, such as the chocolate market research, consumer research on the balanced diet of students, The diet tastes of a particular group of people (students from different provinces).

2. Each group design corresponding survey questionnaire according to the research topic ; the questionnaire question must not be less than 15, must include the basic information;

3.Each group according to the actual need to choose the right place and 30 consumers to conduct market research;

4. After finish the consumer test, focus group interviews will be conducted, that is, to organize 10 consumers which is familiar with the topic and talk face to face to get more information.

5.After complete the data collection, analysis them and complete the experimental report.

The data analysis in the experiment report should contain:

1.Whether the questionnaire can fully excavate the information of the research purpose, attach the questionnaire, and analyze targeted of questions that designed in the experiment report;

2.Statistical analysis of the data from the questionnaire and compare the correlation between two rounds of results (questionnaires and focus group interviews);

3.Summarize whether the qualitative consumer testing has reached its intended purpose (that is whether the collection of information is comprehensive),If the questionnaire is designed and tested again, how to improve it.