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PEOPLE'S REPUBLIC OF CHINA**

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Sensory analysis - Methodology - Magnitude estimation method

感官分析 方法学 量值估计法

(English Translation)

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting.

This document supersedes GB/T 19547-2004 "Methodology of Sensory Analysis. Measurement Estimation Method" and is consistent with GB/T 19547-2004.

Compared to previous versions, aside from structural adjustments and editorial changes, the main technical changes are as follows.

- a) The scope of this document has been expanded (see Chapter 1);
- b) The definitions of the terms "external reference sample" and "internal reference sample" have been changed (see 3.2, 3.3; 3.2, 3.5 of the 2004 edition);
- c) Change the "Note" in "Specialized Training on Value Estimation Methods" to the main text (see 6.2.4, 2004 edition 6.2.4);
- d) The number of members on the consumer evaluation panel was changed (see 7.3, 2004 edition of 7.3);
- e) The content in "Selection of Data Analysis Methods" has been changed (see 9.1, 2004 version 9.1);
- f) Change the "Note" in "Provide of Raw Data" to the main text (see 9.2, 2004 edition 9.2);
- g) Change the "Note" in "Rescaling with Reference Samples" to the main text (see 9.5.2, 2004 version 9.5.2);
- h) Added "Date of Test" (see Chapter 10).

This document adopts ISO 11056:2021 "Methodology of sensory analysis - Estimation of values".

The following minimal editorial changes have been made to this document.

- a) Added notes for the terms "external reference sample" and "internal reference sample".

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed and is under the jurisdiction of the National Technical Committee on Standardization of Sensory Analysis (SAC/TC566).

Introduction

Quantity estimation is a psychophysical scaling technique in which sensory evaluators estimate the intensity of a particular sensory characteristic of a sample and assign it a value.

The corresponding numbers. This method requires that the estimates given by the evaluator conform to the principle of proportionality, that is, if the intensity of a certain characteristic of sample B is greater than that of sample A...

If the value of sample B is twice that of sample A, then the assigned value for sample B is twice that of sample A. Characteristics such as sample strength, pleasantness, and acceptability can all be estimated using the magnitude estimation method.

To conduct an evaluation.

Compared to continuous or discontinuous response scaling methods defined by testers, quantity estimation methods are less susceptible to the "end effect." when evaluators are unfamiliar with the range of intensity of sensations a product evokes, the "end effect" can easily occur. Consequently, the evaluator might overemphasize a particular initial sensation.

The test samples were assigned to categories near the scale endpoints. The results showed that the categories near the endpoints lacked sufficient subdivision.

This leads to samples that are perceptually different being grouped into the same category. Metric estimation can avoid this by using a quantitative method, because its theoretical basis...

Each category clearly corresponds to a different numerical value.

Each evaluator chooses any number to assign a value (i.e., each evaluator uses their own scale), which raises a very important question. "evaluation..." the "price gouging" effect. However, there are several solutions to this problem.

---Analysis of variance (ANOVA) can analyze the rater effect and its interaction with other factors;

---Using an assigned reference sample allows evaluators to use a common scaling range;

---Rescaling transforms the data provided by each evaluator into a common scale range.

The test manager should choose the most appropriate method based on the actual situation.

The magnitude estimation method is not only the preferred method for determining Stevens' psychophysical power functions, but it can also be used to solve specific problems.

Note: When distinguishing stimuli with subtle differences or evaluating them near the detection threshold, the quantitative estimation method is not the most effective method.

Example 1. A company produces a best-selling beverage product, but recently its competitor launched a product with a higher sweetness level, which has taken away the market share of the company's product.

To regain some of the lost market share, the company decided to increase the sweetness of its products by one-third. During the development of the new product formula, if...

Knowing the power function of sweeteners will help estimate the amount of sweetener needed to increase sweetness by one-third.

Example 2. During the development of a new low-sugar beverage formula, the required sweetness intensity has been determined, but it has not yet been decided whether to use aspartame or sucrose as the sweetener.

Based on the known power functions of two sweeteners, isosweetness curves can be plotted to determine the required sweetness level for each sweetener.

The required concentration. Combining this information with cost/production data through comprehensive analysis can help determine which sweetener is more cost-effective.

Appendix B uses R software for data calculations. The R software package is freely available; this information is provided to facilitate the use of users of this document.

This provision does not constitute an endorsement or recommendation of the exclusive use of the R software package. Users may also use other software to perform the calculations required by this document.

Yes. Due to the different software used, the data may sometimes have slight differences in the results due to rounding.

Sensory analysis methodology. quantification estimation

1 Scope

This document describes a method for evaluating sensory characteristics using quantity estimation, including the training of sensory evaluators, the acquisition of estimates, and numerical methods.

According to statistical interpretation.

This document applies to the evaluation of a product's sensory characteristics, such as intensity, pleasantness, and acceptability.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included.