

SENSORY EVALUATION

The most widely used scale for measuring food acceptability is the 9-point hedonic scale. David Peryam and colleagues developed the scale at the Quartermaster Food and Container Institute of the U.S. Armed Forces, for the purpose of measuring the food preferences of soldiers¹. The scale was quickly adopted by the food industry, and now is used not just for measuring the acceptability of foods and beverages, but also of personal care products, household products, and cosmetics.

The hedonic scale was the result of extensive research conducted at the Quartermaster and the University of Chicago. Jones, Peryam & Thurstone (1955)² showed that longer scales, up to nine intervals, tended to be more discriminating than shorter scales, and there was some indication that a scale with eleven intervals would be even more effective³. The nine-point version became the standard at the Quartermaster, because it fit better on the typing paper used to print the ballots.

The verbal anchors of the scale were selected so that the psychological distance between successive scale points is approximately equal². This equal-interval property helps justify the practice of analyzing the responses by assigning successive integer values (1, 2, 3, ... up to 9) to the scale points and testing differences in average acceptability using parametric statistics. The reliability, validity and discriminative ability of the scale was proven in food acceptance tests with soldiers in the field and in the laboratory, as well as in large-scale food preference surveys³.

There have been several extensions of the 9-point hedonic scale. Kroll (1990)⁴ showed that a scale with nine “child friendly” verbal anchors ranging from “super good” to “super bad” performed better with 5-10 year old children than either the original 9-point scale or a scale utilizing “smiley” faces. The original nine 9-point scale has also been translated into several foreign languages⁵. It should be noted that the properties of the original 9-point scale do not necessarily apply to the translations of the scale. Ideally, research similar to that conducted by Peryam and colleagues should be conducted to select the verbal anchors and to confirm the reliability, validity, and discriminative ability of the proposed scale. At minimum, it is recommended that research be conducted to confirm that the rank order of the verbal anchors is unambiguous among the intended test population.

Questions occasionally arise regarding the effect of different presentations of the 9-point hedonic scale, such as vertical vs. horizontal, and for the latter, with “like extremely” or “dislike extremely” on the left. In their 1957 paper, Peryam & Pilgrim³ state that such variations had “no major effect” on the results. Unpublished research conducted at the Quartermaster and later at Peryam & Kroll suggests that different scale presentations can shift the average response. If comparisons are made across studies or to an absolute benchmark (e.g. a rating of 7.0 on the 9-point scale) it is probably best if the scale presentation is consistent across the studies being compared.

9-Point Hedonic Scale

Like Extremely

Like Very Much

Like Moderately

Like Slightly

Neither Like nor Dislike
Dislike Slightly
Dislike Moderately
Dislike Very Much
Dislike Extremely

References

¹ Peryam, D.R. and Girardot, N.F. 1952. Advanced taste test method. *Food Engineering*, 24, 58-61, 194.

² Jones, L.V., Peryam, D.R., and Thurstone, L.L. 1955. Development of a scale for measuring soldiers' food preferences. *Food Research*, 20, 512-520.

³ Peryam, D.R. and Pilgrim, F.J. 1957. Hedonic scale method of measuring food preferences. *Food Technology* (September 1957), 9-14.

⁴ Kroll, B.J. 1990. Evaluating rating scales for sensory testing with children. *Food Technology*, 44(11), 78-80, 82, 84, 86.

⁵ Munoz, A.M. and King, S.C. (eds.) 2007. *International consumer product testing across cultures and countries*. ASTM International, MNL 55.