EUROSENSE MEETING TUTORIAL, ROTTERDAM, THE NEDERLANDS, DECEMBER 13, 2020

Free-comment data collection and analysis revisited and new tools in correspondence analysis

Benjamin Mahieu, Pascal Schlich
INRA – CSGA. France.
benjamin.mahieu@inrae.fr; pascal.schlich@inrae.fr

Abstract

Free-Comment (FC), as a response to open-ended questions, provides sensory descriptions of a set of products with no issue due to a predefined list of descriptors as in Check-All-That-Apply (CATA).

Performances (discrimination, characterization, stability, etc.) of the FC methodology as a method of sensory characterization of products have been poorly documented and FC has rarely been compared to other methodologies of sensory characterization. Further, the use of FC is usually restricted to static sensory descriptions of the products with few considerations given to temporal description, hedonic appreciation and drivers of liking.

FC data is frequency data and as such usually stored in a product by descriptor contingency table and analyzed using chi-square-based statistical tools (chi-square test, correspondence analysis, chi-square per cell, etc.). However, this approach assumes that the independent statistical units are the citations (one descriptor associated to one product by one judge), while there are indeed the evaluations (several descriptors associated to one product by one judge), besides each judge evaluates every product which introduces another dependency not taken into account by the classical approach. Further, the true dimensionality of the associations between the products and the descriptors has never been considered in the statistical analyses of FC data yet.

To popularize the use of the FC methodology in the sensory and consumer science field, performances of the FC methodology have been investigated and compared to those of CATA (Mahieu, Visalli, Thomas, & Schlich, 2020a, 2020b). These studies revealed that FC has nothing to envy to CATA and could even be more performant. Further, modulo some methodological adaptations, the FC methodology also performs well in a context of temporal sensory characterization (Mahieu, Visalli, Thomas, & Schlich, 2020c) and can be a useful tool in investigating hedonic appreciation and driver of liking (work in progress).

Some new statistical approaches have been developed to account for the dimensionality of the associations between the products and the descriptors (Mahieu, Visalli, & Schlich, 2020) and to compute a valid chi-square statistic and correspondence analysis considering evaluations rather than citations as statistical units (Mahieu, Schlich, Visalli, & Cardot, 2020). These new statistical tools are useful to both CATA and FC data and will be available thanks to the *MultiResponseR* R package.

This tutorial will first summarized the papers listed in the reference section including those in preparation. Then it will demonstrate how we pre-treat the FC data in R on a practical example. Finally, attendees willing to use the *MultiResponseR* R package on their own contingency tables or on data from our papers will be guided in that task.

References

Mahieu, B., Schlich, P., Visalli, M., & Cardot, H. (2020). A multiple-response chi-square framework for the analysis of Free-Comment and Check-All-That-Apply data. *Manuscript in preparation*.

Mahieu, B., Visalli, M., & Schlich, P. (2020). Accounting for the dimensionality of the dependence in analyses of contingency tables obtained with Check-All-That-Apply and Free-Comment. *Food Quality and Preference, 83*.

Mahieu, B., Visalli, M., Thomas, A., & Schlich, P. (2020a). Free-comment outperformed check-all-that-apply in the sensory characterisation of wines with consumers at home. *Food Quality and Preference, 84*.

Mahieu, B., Visalli, M., Thomas, A., & Schlich, P. (2020b). An investigation of the stability of Free-Comment and Check-All-That-Apply in two consumer studies on red wines and milk chocolates. *Manuscript submitted for publication*.

Mahieu, B., Visalli, M., Thomas, A., & Schlich, P. (2020c). Using Free-Comment with consumers to obtain temporal sensory descriptions of products. *Food Quality and Preference, 86*.