Rapid Profiling Technique: Free Choice Profiling

What is Free Choice Profiling?

Free Choice Profiling is a rapid sensory profiling method which does not require a consensus vocabulary. Each assessor individually determines their own list of attributes by which he/she evaluates the samples. Samples are then rated by the assessor for the intensity of each descriptive term in his/her attribute list using line scales. This saves the time spent in traditional profiling training the panel on the descriptive terms and producing a standard lexicon. The output of free choice profiling is a map of the samples the dimensions of which are defined by the attributes used.

Why would you use it?

Free Choice Profiling was originally developed to allow the understanding of different words by consumers when describing the same characteristic[1]. As such it is an ideal technique to use when you want to know all the words different consumers use to describe your product set and how they perceive the inter-sample differences. Once you have the words from the consumers, you can establish which words were used the most and in the same way and use them in future consumer test questionnaires, setting quality standards or when communicating with your consumers through marketing and advertising.

Free Choice Profiling is the perfect technique when you need to understand the relationships and groupings between a sample set, and get a broad understanding of the reasons why they are discriminated in this way, but you do not have enough time to train your sensory panel to produce a consensus vocabulary.

Who would you use?

Trained panels or consumers. We have used our trained panel and consumers to carry out Free Choice Profiling and both groups gave a sample map that was comparable to that obtained from traditional descriptive profiling. If you are going to use consumers they should be regular uses of the product and be articulate (the better they can describe the samples the more information about the product set you will get). There is no denying that to produce consistent and reliable results from line scales training is required.

What samples can you assess?

Any and all (as long as they belong to the same product set)! Just like traditional profiling, the samples are served one at a time to the assessor for evaluation and the normal controls and protocols of sample preparation and serving should be applied. The number of samples that you can profile really depends on the products that you have available, the amount of time you have

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[1] Williams, A. A., Langron, S.P. (1983). A new approach to sensory profile analysis. In: Piggot, J.R., Editor. *Flavour of distilled beverages: origin and development*. (pp219-224). Ellis Horwood: Chichester

to collect the data, and sensory considerations such as flavour strength, fatigue, assessor motivation and so on.

In terms of selection of the sample set for your project the normal rules apply: if you are going to use the information to create consumer questionnaires or set quality standards you should include samples that cover the whole market for the product set as well as those samples with 'less than desirable characteristics'.

How is it done?

Free Choice Profiling is carried out in two sessions: an attribute generation session and a rating session. The attribute generation session is carried out using pencil and paper but you can use data collection software for the rating session if available. Otherwise paper and pencil works fine! The procedure is the same for both trained assessors and consumers; however consumers will require much more guidance.

To carry out Free Choice Profiling follow these steps:

Attribute Generation Session:

1. Present all the samples (either simultaneously or one at a time) to the assessor.

2. Ask them to evaluate each sample and record all the attributes they perceive in each sample and to note if it is an aroma, flavour, mouthfeel, texture or aftertaste term.

3. Once they have evaluated all the samples ask them to list all the descriptive terms they have generated and group them by modality (aroma, flavour etc). For consumers you may want to assist them with this step to ensure all the words are listed in the correct modality.

4. You will also need to ask them to think about the scale anchors. For most sensory attributes they could use the anchors 'not-very', but for some attributes they may need to assign different ones e.g. 'small-large' or 'fast-slow'

If you are using consumers we recommend that you give them a short presentation informing them about the types of words that you are interested in e.g. sensory, context of use etc. and if you are interested in sensory terms, explain to them about the different sensory modalities. By doing this you will get much more valuable data. Another good idea when carrying out this technique with consumers is to present the samples in triads (sets of three) so they can compare them for similarities and differences which will help them generate more terms.

Sample Rating Session:

1. Create a ballot (questionnaire) for each assessor using their unique list of descriptive terms. This can be done using your normal sensory testing software (we used Compusense) – the only difference is that each person will have their own program or alternatively, you can create paper ballots.

2. Associate each term with a line scale and the anchors decided above. If you are concerned about consumers using line scales you could use category scales e.g. 1 = not at all intense to 9 = extremely intense.

3. Just like with traditional descriptive analysis samples are assessed one at a time by the assessor and you can use a complete block design to ensure the sample presentation order is fully balanced.

4. Depending on the amount of time available you could evaluate the samples in duplicate or triplicate. We carried out two replicates to evaluate how consistent our panel and consumers were between reps.

5. All the data is either exported (if using computerised software) or entered (if using paper ballots) into an Excel spreadsheet.

How do you analyse the data?

Data is analysed using a multivariate technique such as General Procrustes Analysis (GPA) which can account for assessors using different parts of the scale and is suitable for comparing different matrices (i.e different numbers of attributes). You can either ask a statistician who is familiar with sensory data (we recommend QI Statistics www.**qistatistics**.co.uk) or you can have a go yourself using XLSTAT. XLSTAT is a user-friendly statistical software package that can carry out highly efficient statistical and multivariate data analysis.

The output of the analysis will be a consensus product configuration map to show overall or by modality how the products were perceived in relation to one another. Plots can also be produced for each attribute to determine which attributes are being used to describe a particular characteristic.

Don't get caught out by...

• You may need to check if your normal sensory testing software can accommodate free choice profiling.

• Underestimating the amount of time taken to produce the individual assessor ballots both on paper or computer. Also if you are collecting data on paper you may need to allow time to measure the line scales and enter the data from line and category scales.

Although it may seem like a lot of work to set up on computer, it also takes an enormous amount of time to type up and print out paper ballots for each assessor (especially for a consumer test) and then enter all the data into a spreadsheet – workout realistically how long everything is going to take.

For more information contact us at info@sensorydimensions.com