

COMBINE & CONQUER:
**HARNESSING THE POWER OF COMPARATIVE AND DESCRIPTIVE PROFILING TO UNDERSTAND
CONSUMER REACTIONS TO SUBTLE PRODUCT DIFFERENCES IN CHALLENGING PRODUCT
CATEGORIES**

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MMR Comparative DA was developed to generate discriminatory, yet comprehensive data in a product set with subtle sensory differences

Sensory panel can sometimes struggle to differentiate between very similar products



Average consumer finds it difficult to articulate differences

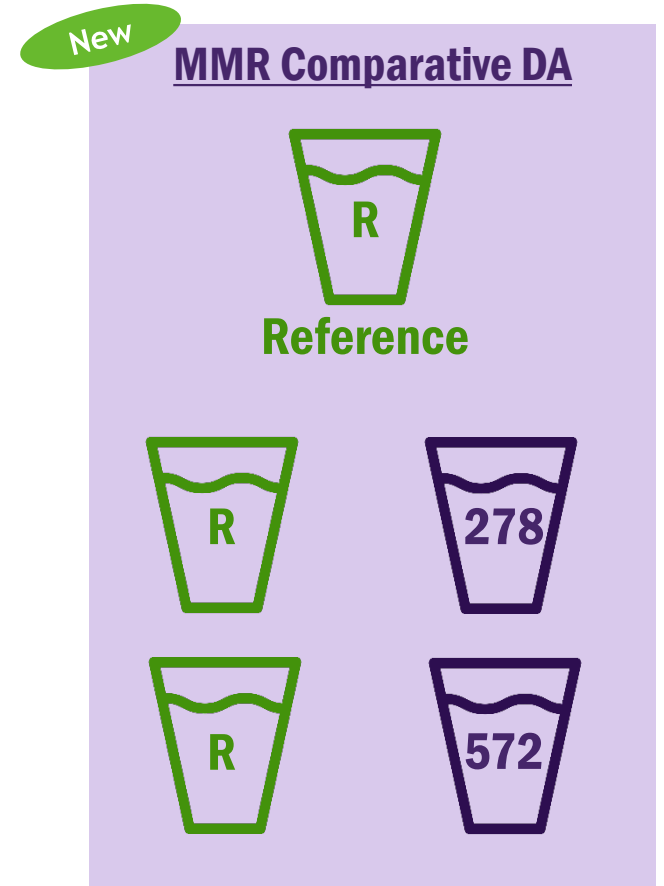
"I like this product because it tastes better, but I can't pinpoint why"



Sensory Methodologies



Reference shown initially with subsequent individual test products



Reference shown alongside each test product and tasted first with no re-tasting allowed

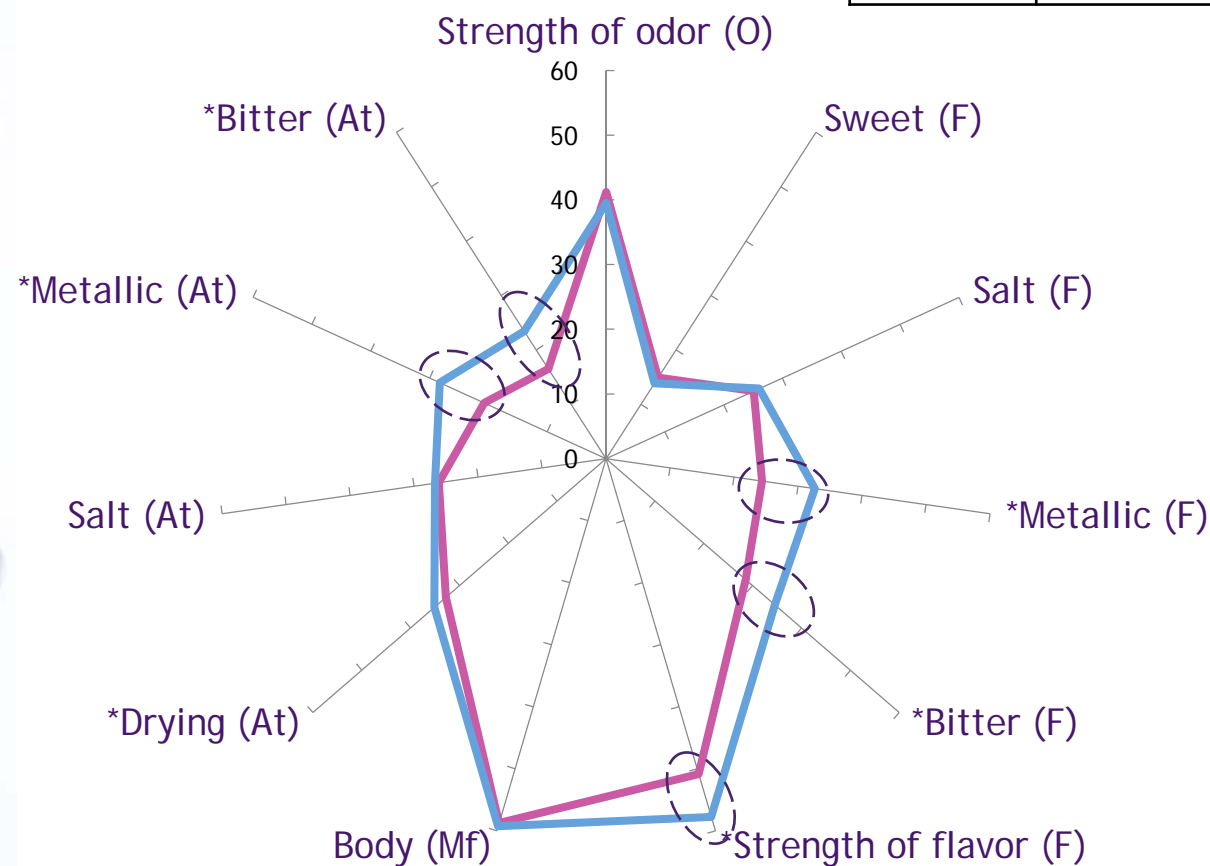
MMR Comparative DA can be applied to products as similar as water

MMR Comparative DA was able to pull apart subtle differences that helped explain consumer preferences between two main competitors of mineral water



O	Odor
F	Flavor
Mf	Mouthfeel
At	Aftertaste

Sample	Overall Liking (mean)
A	7.1 ^a
B	6.5 ^b



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INTRODUCTION

Consumers can judge the extent to which they like or dislike a product, even in the most challenging categories and between highly similar products. However, consumers find it notoriously difficult to articulate which sensory characteristics are influencing their liking. This is particularly the case when differences between products are very subtle, yet clearly play a role in preference.

In contrast, a trained sensory panel can describe and quantify differences amongst products to bring clarity to consumer drivers of liking. In these situations, having a clear understanding of attributes motivating preference is key to product development.

A typical sensory approach to quantify differences between products, such as descriptive analysis (DA), can struggle to capture subtle nuances between very similar products and can lead to "flat data" with little or no discrimination amongst products^[1]. Alternatively, Pivot Profile[®] delivers focused descriptive learnings, yet lacks the quantification stage essential for full analysis^[2]. This highlights a need for a modified combined approach, harnessing the power of DA and comparative profiling for these challenging product categories. This research outlines the development of a comprehensive, discriminatory sensory DA technique. We used the subtle sensory differences in mineral waters as a case study to develop MMR Comparative DA.

METHOD

MMR DA currently uses a comparative element, including a standard sample that the panel uses to familiarize themselves and subsequently score each sample on line scales. This reference sample is presented to the panel during the product familiarization stage, and then evaluated in the same way as other samples in the test.

MMR Comparative DA builds further comparisons to maximise accuracy and discrimination.



Figure 1: 50ml mineral water samples presented at ambient temperature

As per MMR DA, panelists (n=12) were familiarized and trained on a set of seven mineral water samples, presented as 50ml serves at ambient temperature (Figure 1).

A vocabulary was developed and a reference sample, exhibiting mid-point sensory characteristics, was determined. Attribute scores were developed for the reference product by the panel, through consensus scoring.

The resulting reference scores were anchored on 100-point unstructured line scales for all product evaluation (Figure 2).



Figure 2: Line scale with reference score fixed on scale

The main difference between MMR DA and MMR Comparative DA is in the panel evaluation stage. Instead of evaluating all samples in isolation (as in MMR DA), each sample was evaluated alongside the reference sample. The reference sample was tasted first, and re-tasting was not allowed. This enabled the panelists to be very sensitive to the subtle differences between products that were driving the differences in preference (Figure 3).

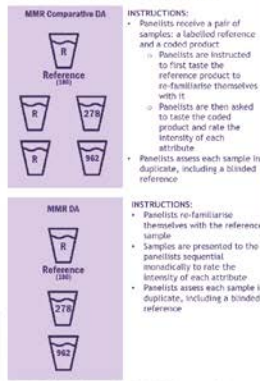


Figure 3: Differences between MMR DA & MMR Comparative DA

Data collection on line scales produces similar outputs to MMR DA. Analysis is aligned between the two methods and therefore has a huge advantage over the Pivot Profile[®] method, where the data analysis stage is more limited^[2].

OUTCOMES & DISCUSSION

MMR Comparative DA was able to pull apart subtle differences that helped explain differences in consumer preference (between the two main competitors of mineral water on the market - Figure 4).

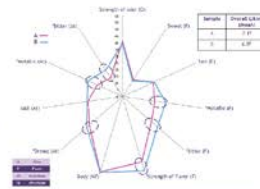


Figure 4: Discriminant differences between the most and second most liked mineral waters (95% confidence)

KEY BENEFITS OF MMR COMPARATIVE DA

- Maximizes discrimination and leverages the power of comparative techniques
- Provides complete DA data for PCA, correlation and drivers of liking modeling
- Gains insightful data on challenging product categories
- Explains differences in consumer liking in very similar, difficult product sets
- Comparative element is easy for panelists to adopt, no extra training is required

LIMITATIONS

- Difficult to use with products with a strong carry over effect

CONCLUSIONS

Overall the methodology enabled detailed sensory understanding of a challenging product set, to ensure consumer liking data could be better explained to provide optimization guidance to manufacturers.

References:
[1] Stone et al. (2012) Alternative methods of sensory testing: advantages and disadvantages. Applications in New Product Development. Consumer Research
[2] Zhoul et al. (2013) Pivot profile: A new descriptive method based on free description. Food Quality and Preference Volume 41, June 2013, pages 96-101.

Key Benefits & Limitations

- ✓ The comparison element maximizes discrimination and allows insightful data to be collected on challenging product categories e.g. water, milk, butter, raw fruits
- ✓ Easy for panel adoption, as not too different to MMR DA
- ✓ Differences in consumer liking scores of similar products can be explained
- ✓ Provides complete DA data for PCA, correlation and drivers of liking analysis (unlike Pivot Profile[®])
- ✗ Difficult to use with products with a strong carryover effect