



Understanding regional differences between global descriptive sensory panels

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INTRODUCTION

Panellists' perceptions are inherently influenced by their background, culture and experiences. Trained sensory panels in different regions will often use different sensory language and scale values to rate the same products (Risvik et al., 1992; de Jong et al., 1998).

Training helps to mitigate some of these regional differences, especially if the sensory panel aligns to a global lexicon or uses a standardised calibrated scale. However, MMR's Standard Descriptive Analysis (DA) method allows each sensory panel to develop their own sensory language and scaling, based on the product set of interest, so that some cultural differences may still be observed.

METHODOLOGY

TRAINING & PROFILING:

6 Sensory panels (consisting of 9–14 panellists) evaluated the same 6 strawberry milk candies using MMR's DA method, with no alignment between the panels. Individual panellist evaluations were conducted in duplicate.

DATA ANALYSIS:

Regional results were initially statistically analysed using ANOVA, Principal Component Analysis (PCA) and cluster analysis, to show the similarities and differences between the products. Generalised Procrustes Analysis (GPA) was used to compare the results across the regions.

STUDY DESIGN

MMR's commercial sensory panels in 6 different regions (China, India, The Netherlands, Singapore, UK and US) evaluated the same 6 strawberry milk candies using MMR's DA method.

The product set was selected to represent different countries and a unique sensory space (less familiarity with all panels).

LOTTE FLUFFY MALANG COW STRAWBERRY



WANGZAI MILK STRAWBERRY CANDY



HARIBO STRAWBERRY MILKSHAKES



GALATINE STRAWBERRY



MOO MILK STRAWBERRY TABLET



SHUNLONG DRY MILK STRAWBERRY TABLETS



RESULTS

FIG. 1A – GPA PRODUCT MAP

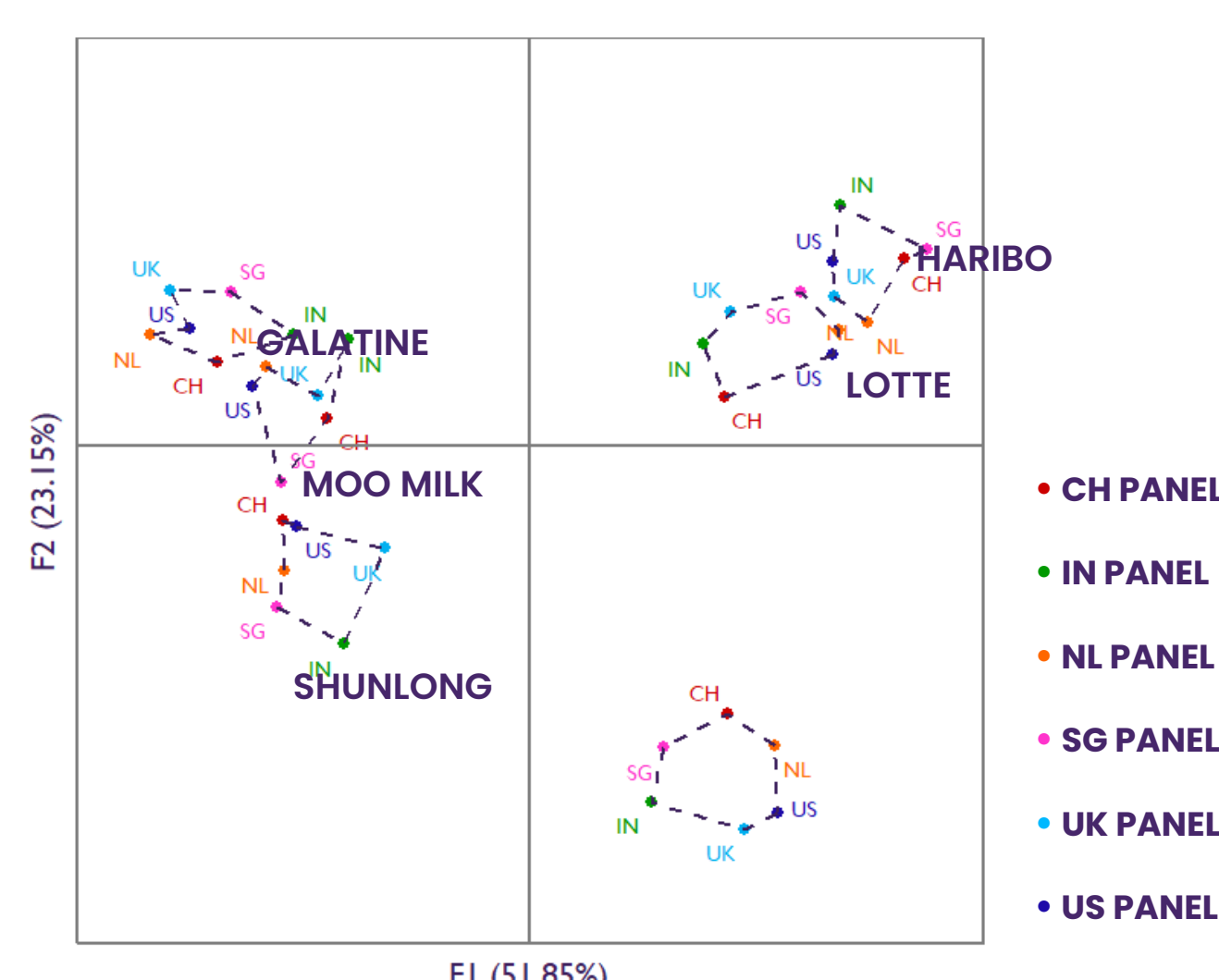
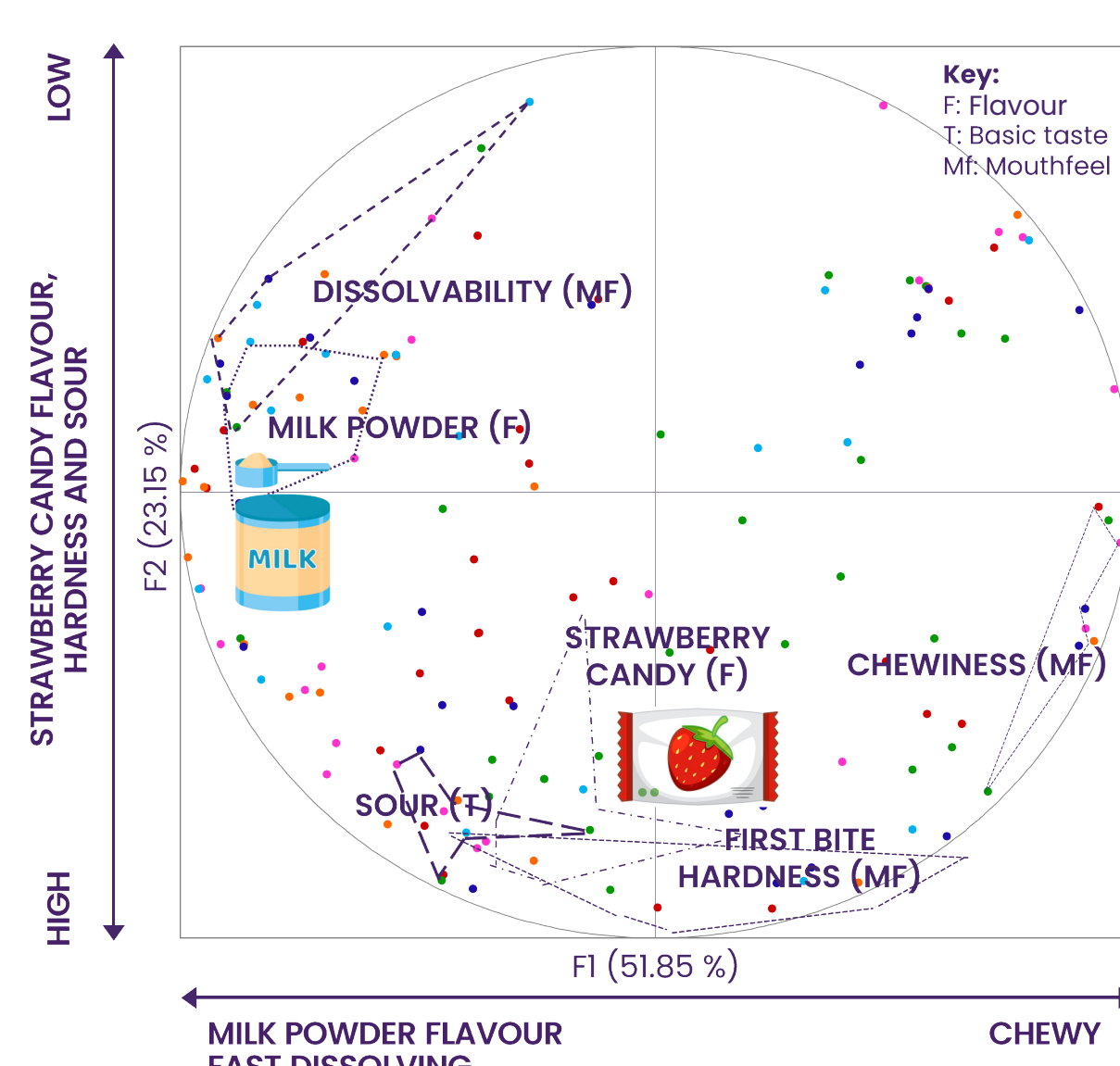


FIG. 1B. GPA ATTRIBUTE MAP

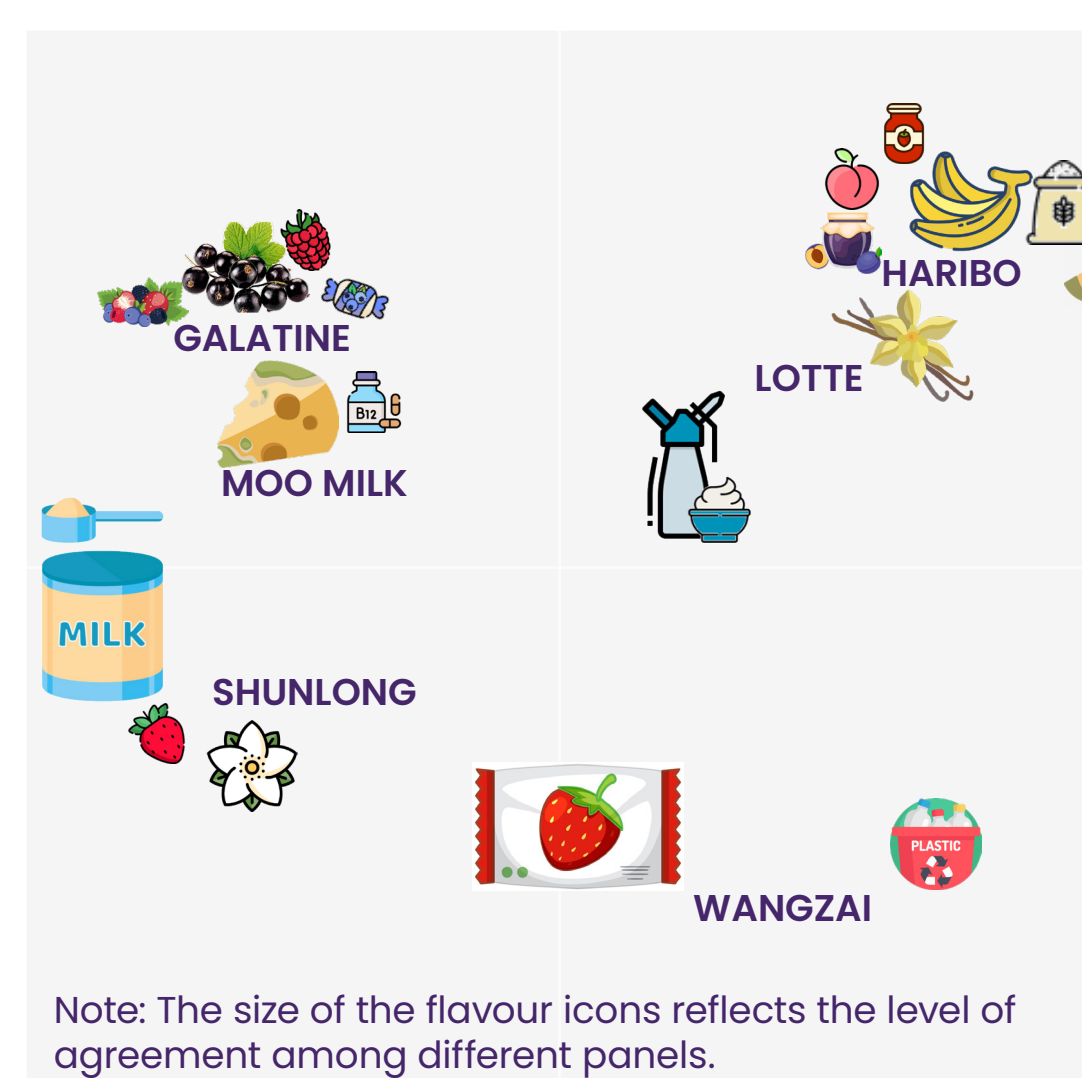


KEY FINDINGS FROM GPA MAP

- Product positions of the 6 regions are very consistent.
- The sensory space of the 6 strawberry milk candies is driven primarily by **Milk powder flavour & Fast dissolving** (Galatine, Moo Milk) vs. **Chewy** (Lotte, Haribo)
- Sensory space is further separated by **Strawberry candy flavour, Hardness & Sourness** (Shunlong, Wangzai)

RESULTS

FIG 2. GPA PRODUCT MAP WITH FLAVOURS OVERLAID



KEY FINDINGS FROM PRODUCT FLAVOUR RATINGS

DAIRY

- The primary dairy note, **Milk powder** (🥛) is rated consistently across regions (high = Galatine, Moo Milk; low = Lotte, Haribo)
- 3 regions (CH, UK, US) rated **Fatty dairy** (🧈) note, with consistent product ratings (highest in Lotte)
- The other 3 regions (IN, NL, SG) rated **Fermented dairy** (🧀) note, though with less consistent product ratings

FRUITY

- The primary fruit note, **Strawberry candy** (🍬) is rated consistently across regions (higher in Shunlong, Wangzai), with one region associating Shunlong with high Fresh strawberry (🍓; CH)
- Shunlong is additionally rated high in **Floral** (🌸; US, IN)
- Wangzai is additional rated as **Plastic** (🍬) by 2 regions (US, UK)
- Galatine is generally considered to have other berry flavour profile, such as **Blueberry candy** (🍷; CH), **Blackcurrant** (🍇; SG, IN), **Forest fruits** (🌲; NL) and **Raspberry** (🍷; UK)
- Haribo is considered to have a low overall flavor profile across all 6 panels. It is generally considered to have **Vanilla** (🌸; NL, UK, IN), and other fruit notes, including **Banana** (🍌; US, SG, IN), **Peach** (🍑; NL), **Preserved strawberry** (🍓; CH), **Preserved plums** (🍷; SG), **Floury** (🍞; SG, IN), **Fresh raspberry** (🍷; SG) and **Musk melon** (🍈; IN)

CONCLUSIONS

- All 6 regions have similar sensory results, despite each region developing their own sensory lexicon and scaling
- Texture differences are very consistent across regions, and are primarily driven by product format:
 - Tablets are fast dissolving (Galatine, Moo Milk, Shunlong)
 - Remaining gummy type products are chewy (Lotte, Haribo, Wangzai)
 - 2 products stand-out as being harder (Shunlong & Wangzai)
- Basic tastes (sour and sweet) are very consistent across regions
 - Shunlong & Wangzai are the most sour products
 - China is the only region that found small, but notable differences in saltiness
- Flavour descriptors show more regional differences, especially in fruit flavour
 - This may be because the fruit flavour profiles are more diverse and complex or because fruit has more regional differences (local fresh and processed fruits)

REFERENCES

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