Going Beyond Hedonics with Maximum Difference Scaling for R&D

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Introduction

Today, most CPG and Food/Beverage companies develop consumer loved products. Benchmarks and prototypes all show high hedonic ratings with little product differentiation. Unfortunately, the hedonic measure is becoming more and more of a blunt measure in providing direction for 21st century R&D challenges. Hence, more and more companies are using *profiles* of test products to determine their viability for commercialization. Moreover, to obtain more actionable *profiles*, multiple sources of information are employed followed by data integration.

The overall objective is to show how Maximum Difference Scaling (aka, best/worst) can be used to obtain emotional profiles of eight yogurts, and integrate these profiles with consumer liking, just right scales, and descriptive analysis profiles for actionable R&D guidance. The overall goal is to uncover the sensory drivers of emotions evoked by the product experience – at least with yogurt.

General Method

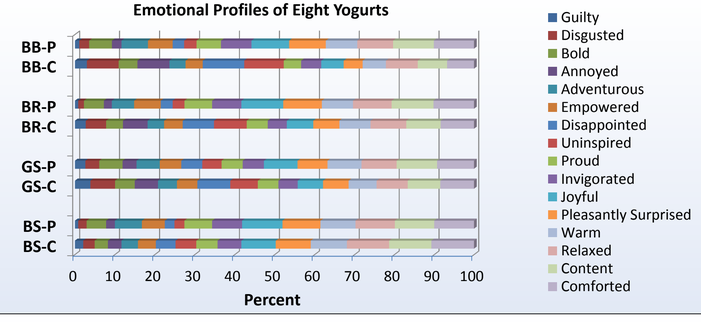
Four low fat Commercial yogurts were selected: blueberry, raspberry, blended strawberry and Greek strawberry. For each flavor/type, a prototype was developed for a total of eight test products. For the acceptability and MaxDiff tests, 100 yogurt 'lovers' evaluated all eight test products over two days. Electronic devices were used for data collection. Descriptive Analysis (Spectrum® Method) was independently performed.

MaxDiff of Emotions

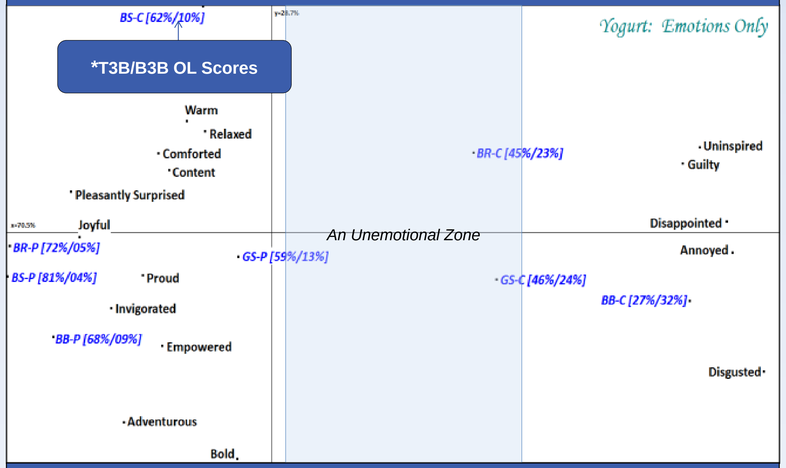
MaxDiff is based on a measure of consumer choice and trade-off. From a master list of 16 emotions, consumers were asked to evaluate each product on 16 sets of 4 emotions by choosing a 'most relevant' and a 'least relevant.' Analysis consisted of Hierarchical Bayes and the raw utility scores were rescaled to zero and a sum of 100. Since the re-scaled scores follow ratio scaling, a score of 10 is twice relevant as a score of 5. Below is an example of a MaxDiff screen and an output graph.

Select the emotion that is most relevant and the emotion that is least relevant

Most Relevant	Emotion	Least Relevant
❒	Pleasantly Surprised	❒
❒	Annoyed	❒
❒	Comforted	❒
❒	Bold	❒



Correspondence Analysis of MaxDiff



MaxDiff Profile Findings

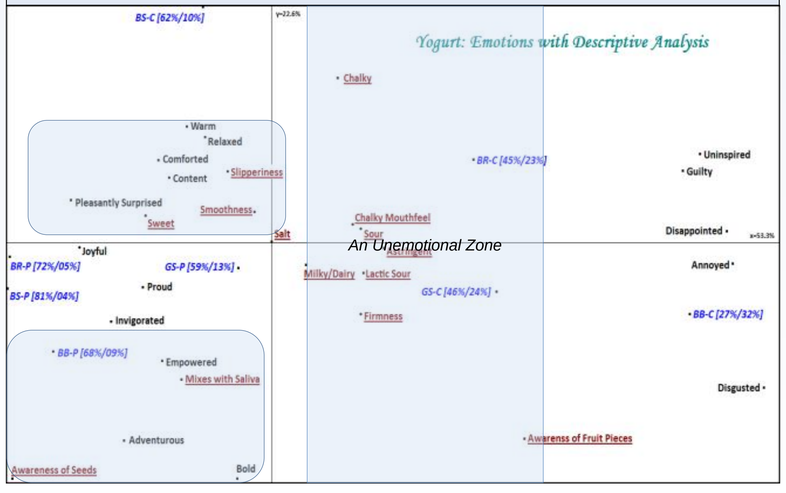
The x-axis can be characterized as positive vs. negative emotions. The y-axis low energy to high emotional energy.

Clearly, the four prototypes and BS-C occupy a positive emotion neighborhood. The four prototypes are more characterized by high energy emotions such as Proud, Invigorated and Empowered. BS-C and GS-P have similar hedonic scores but different emotional profiles. BS-C is perceived to be Warm, Relaxed, Comforted and Content. GS-P is more Proud and Invigorated.

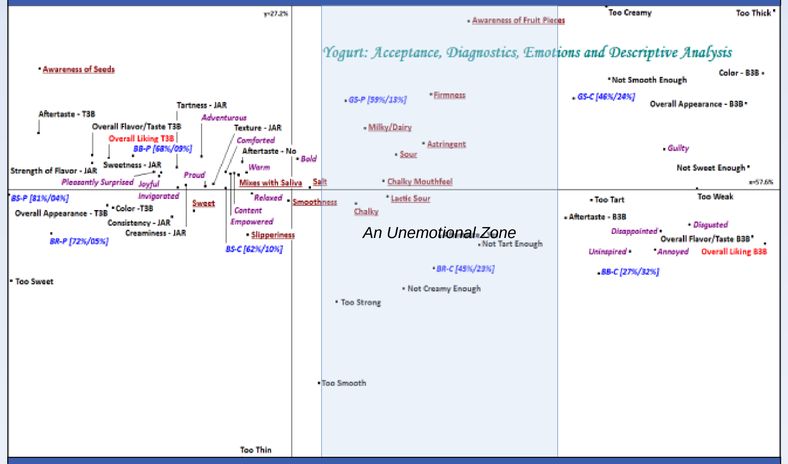
BR-C and GS-C have similar hedonic scores and neither have particularly strong emotional associations, although they reside closer to the negative emotions neighborhood.

BB-C profiles as Disappointed, Annoyed and Disgusted. BR-C is characterized as Uninspired and Guilty.

Let's integrate Descriptive Analysis into the Emotional Profiles



All Sources of Data



Map Key

TEST PRODUCT	MAP CODE
Blended **S**trawberry-**C**ommercial	BS-C
Blended **S**trawberry-**P**rototype	BS-P
Blended **B**lueberry-**C**ommercial	BB-C
Blended **B**lueberry-**P**rototype	BB-P
Blended **R**aspberry-**C**ommercial	BR-C
Blended **R**aspberry-**P**rototype	BR-P
Greek **S**trawberry-**C**ommercial	GS-C
Greek **S**trawberry-**P**rototype	GS-P

Insights

- Not surprisingly, positive emotions cluster around well liked yogurts. But of interest is that well liked products divide into two neighborhoods – active and passive positive emotions.
- Among the well liked yogurts, the highest tier of hedonic ratings are associated with high energy emotions such as Invigorated, and taste related sensory attributes such as sweet.
- The 2nd tier of well liked products take on a more passive emotional profile (Warm, Comforted), and relate more to the textural sensory attributes

MaxDiff Summary and Benefits

It was shown that:

- Test products with similar hedonic scores can have different emotional profiles.
- Active and Passive positive emotions associate with differing sensory characteristics (consumer and descriptive) -- Active more with sweetness, Passive more with mouthfeel (smoothness, mixes with saliva.)
- Emotional profiles can be integrated into descriptive analysis and consumer acceptance measures for more actionable R&D guidance.

Perform Maximum Difference Scaling to profile your test products on emotions, benefits and/or perhaps imagery.