

HOW DOES YOUR CAPPUCCINO FEEL?

USING SYNAESTHESIA TO CREATE A VISUALLY INTERACTIVE EXPERIENCE OF FLAVOUR

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INTRODUCTION

It is now widely accepted that human emotions play a significant role in driving our decisions, from the type of content we watch to the products and services we buy (LeDoux 2002; Damasio 1994). Physiological changes in our heart rate, posture, facial expression and voice convey emotion responses to the world around us. These responses are encoded in the System 1 brain circuit, the automatic and largely emotional processing system of the brain. When making decisions, our past and current emotion experiences bias our decision-making subconsciously, making emotions an important influencer on our decisions (Loewenstein and Lerner 2003).

BACKGROUND

In 1871, Victor Mane started producing fragrances from regional flowers and plants in the South of France. Since then, the small distillery near Grasse has grown successfully to become one of the leading Flavours and Fragrances companies worldwide and it has continued to be run by the Mane family during all this time. MANE nowadays employs 3000 people in 30 countries and has 22 Manufacturing sites and 37 R&D Centres. Mane understands that Flavours and Fragrances need to touch the emotions and help create brands that consumers love. Lovemarks, or brands that consumers love, have been shown to need intimacy, mystery and sensuality, i.e. they must touch all five senses and taste has a fundamental role to play in building these close relationships between brands and their consumers (Roberts 2002 & 2004). Mane's mission is to capture not only what people like, but also that which deeply moves each individual, and so everyone. They also recognise the power of consumer insight to enable them to achieve this mission.

THE METHODOLOGY

The downside of flavour testing techniques based on purely verbal questionnaires is that consumers have a very limited vocabulary when it comes to describing fragrances and flavours. Flavour testing in the past has limited itself to hedonic questions and verbal rating scales and therefore often lacked sensitivity, making it difficult to discriminate between one flavour and another. Our Sensations™ methodology uses the principles of the psychology of Synaesthesia to overcome these problems.

In 2008 Mane approached QRi Consulting (formerly CRAM International) to help develop a tailored approach based on Sensations™ to measure the emotion surrounding flavours in consumer brands. Using the principles of Synaesthesia allowed the development of a rich emotionally based description of each flavour tested to create a visual and verbal language that Flavour Experts and Marketers at Mane use to help engineer brand positioning via flavour. It has previously been demonstrated that Synaesthesia can be successfully applied to sensory testing techniques to look at emotional effect in both a blind and in a branded context (Cooper and Binder, 2007).

'Synaesthesia' is a neuro-psychological mechanism whereby sensations in one sense create sensations in other senses, or more simply is 'the union of the senses' (Cytowic, 2002). The same applies to all the senses, i.e. colours can be experienced as shapes, music as colours, textures as sounds, and so on – 'the colour of a kiss', 'seeing pain' – so flavours are experienced as colours, tastes, textures, sound, and so on.

We can therefore measure emotional responses to flavours by building a projective world around each flavour tested, rather as we do in groups, but using fun and visual elicitation techniques on the iPad to look at how the flavour is experienced in terms of the other senses, i.e. sight in terms of colours associated with it, touch in terms of material associations, smell in terms of odours associations, hearing in terms of musical mood associations and so on. Synaesthesia is thought to be the basis of long-term memory, imagination, emotion, and language, and can potentially lead to improved brand relationships through better sensory and emotional engagement with consumers (Cooper and Binder, 2007).

Demand for more diagnostic insights in flavour and fragrance testing has led us to look beyond traditional techniques. Traditional approaches tend to lead to limited discrimination between flavours tested as we do not have the language in questionnaires on standard liking and attribute scales to allow respondents to express what they truly feel about flavours in emotional terms. So we used the principles of Synaesthesia and QualiQuant® to modernise more classical flavour testing approaches using an iPad interview that is more akin to a touchscreen gaming type environment. Ten instant flavoured cappuccinos with different twists and ingredients in their flavours were tested in a blind sequential monadic design. Testing was carried out blind because Mane wished to determine whether we could engineer different emotional positionings based on the flavour alone. At the end of the interview we also introduced a key brand of Cappuccino and tested what positioning that occupied. This enabled us to compare the blind power of the flavour to evoke emotions with the emotions evoked by the positioning of the main brand in the market place.

iPad interviews (250) were carried out by Acumen Fieldwork Ltd. in central locations in the UK. Six flavours out of ten flavours were tested by each respondent in a predetermined rotated sequence. That gave a final sample size of 150 per cappuccino flavour. Respondents found the interview process on iPads to be fun and engaging and this enhanced our ability to create a more engaging interview with a 'qualitative', projective feel.

The 'Synaesthesia' approach used here is based on the fact that flavours can be described and profiled in terms of the other senses, i.e. touch, odour, sound and vision and we can measure the emotional impact of a flavour in those terms using a projective QualiQuant® approach. Visual elicitation was used to go well beyond rational verbal responses.

We have also blended this modernised but tried and tested QualiQuant® Synaesthesia technique with the new, exploratory technique of Facial Coding to investigate the differences between the initial response to each flavour and more considered responses on hedonic liking scales later in the interview.

In recent decades Psychologists have distinguished between two systems of thought with different capacities and processes (Sampson and Voyer, B.G. 2012) which have been referred to as System 1 and System 2 (Stanovitch, and West, 2000). System 1 is generally automatic, affective and heuristic based, which means it relies on mental "shortcuts". It quickly sorts out intuitive answers to problems as they arise. (Heuristic meaning "based on trial and error"). System 2, which corresponds closely with controlled processes, is slow, effortful, conscious and rule based and can often be employed to monitor the quality of the answer provided by System 1. If it is convinced that our intuition is wrong, then it's capable of correcting or overriding the automatic judgements. Nobel prize winner and "intellectual" godfather of Behavioural Economics Daniel Kahneman summarised all his learnings in his book "Thinking, Fast and Slow" (Kahneman 2011). Kahneman's fundamental proposition is that we identify with System 2 - "The conscious, reasoning self that has beliefs, makes choices and decides what to think about and what to do". But, System 1 is really in charge as it "effortlessly originates impressions and feelings that are the main sources of the explicit beliefs and deliberate choices of System 2". Much conventional market research assumes that decision-making is done only by System 2 with little input from system 1. Kahneman shows that this is not the case and that researchers need to think about how to account for the influence of System 1 in consumer decision making.

The QualiQuant® Synaesthesia technique measures emotional System 1 reactions by using many visual association techniques. We also believe that consumers' initial System 1 type emotional reactions on taste occur rapidly in a few split seconds after tasting as the emotional and cognitive centres of the brain react before the person is even aware of it. So to capture this we filmed a small subsection of the interviews and used facial coding using expert to analyse those facial expressions of emotion in the decisive few seconds after each Cappuccino flavour was first tasted. We then compared the facial coding results with hedonic liking scores with some interesting results that we discuss later in the paper.

This test worked at six levels moving from the emotional System 1 responses to the more rational System 2 ratings of each flavour which were follows:

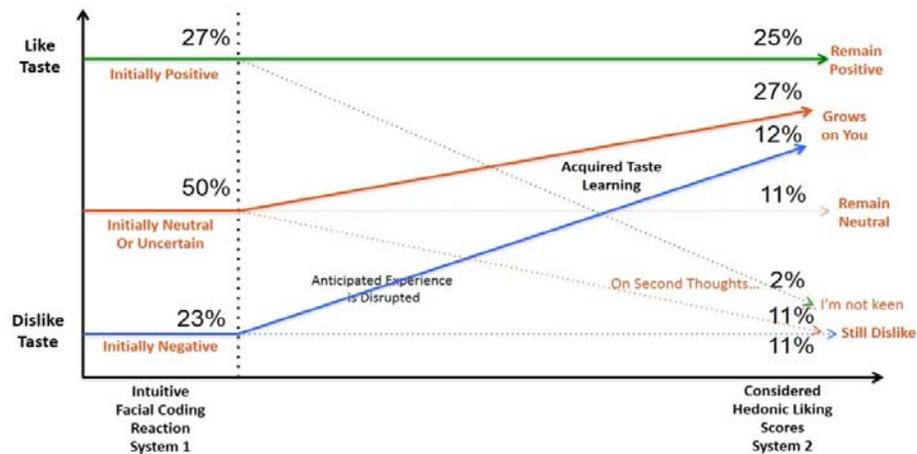
1. Facial coding of initial emotional response to flavour. The closest to System 1 rapid intuitive response
2. The Blind Synesthetic and Emotional Level - creating an imaginary projective world around the blind flavours as one would in groups and using fun interactive questions in a gaming touch screen type environment to elicit reaction in terms of the different senses, sight (colour of the flavour), touch (feel of the flavour), sound (music) and feelings (emotions and adjectival associations). This is designed to access system 1 type reaction.
3. Blind Marketing Positioning – elicitation using ten visual sets depicting different positioning areas based on needstates such as 'Social', 'Energisation', 'Seduction', 'Pleasure', 'Wellbeing' etc. Again accessing system 1 reactions.
4. Blind Hedonic Liking – asked a 10 point like/dislike slider towards the end of the set of questions on each flavour. This was then compared to emotions identified in facial coding. Clearly this moves respondents into system 2 type rational mode as do levels 5 and 6 below.

5. Blind Taste Associations and likes and dislikes of each taste identified – again a more direct question using visuals depicting all the relevant taste directions included by flavourists in this flavour set.
6. Branded Marketing Positioning – at the end of the interview after testing all flavours we asked about the positioning of a key market player brand of cappuccino.

RESULTS

As we would expect there is some significant movement between level 1 System 1 initial emotional response to flavours which shows quite a bit of neutrality or uncertainty (as these are new and innovative flavour twists) and more considered verbal hedonic liking which tends to be more positive at the System 2 level of more rational assessment of those flavours.

FIGURE 1, - MOVEMENT OF FLAVOUR RESPONSE BETWEEN SYSTEM 1 EMOTIONAL REACTIONS AND LEVEL 2 HEDONIC LIKING SCORES



The facial coding recognises the immediate taste impact the second it happens. Consumers' first reaction is to try and "recognise" the flavour rather than actually like or dislike it. Was it what they were expecting based on their familiarity with the category or was it a bit more "leftfield". Some of the flavours we tested were a genuine surprise ("twist") for cappuccino, unexpected flavours which can "shock" or confuse the taste buds. The brain expects a typical cappuccino taste but then experiences something quite different. Some of these flavours are far removed from expected typical coffee flavours (e.g. spices, nuts or fruits) and take consumers by surprise due to their unfamiliarity with the category and are a more adult taste experience. Sweeter, more chocolate orientated flavours are more accepted and expected due to the nature of Cappuccino - creamy, velvety, sweet, sugary, etc.- they deliver a more anticipated cappuccino experience. They have similarities with hot chocolate, a more childlike taste experience.

These first taste reactions are similar to the experience of drinking wine - not everyone likes the first sip but once the taste buds become more acclimatised to the taste they may become more positive about it. Experience of the taste changes over time.

In this case after the first taste respondents were encouraged to keep sipping the cappuccino throughout the interview and as they did clearly their opinion of the flavour changed in some cases. The majority of respondents in this study who started with positive emotions remained positive about the taste experience throughout the test. Just over half of those whose initial intuitive reaction was neutral or uncertain became more positive having sipped it throughout the interview and similarly of those who were initially negative about half of them become more positive. In other words the taste grew on them and the consumers are focussing on the positive side of the experience as they get used to the flavour taste "twist". It would appear that Consumers learn to appreciate a taste, even though initially they may subconsciously reject it as it is foreign to their expectations.

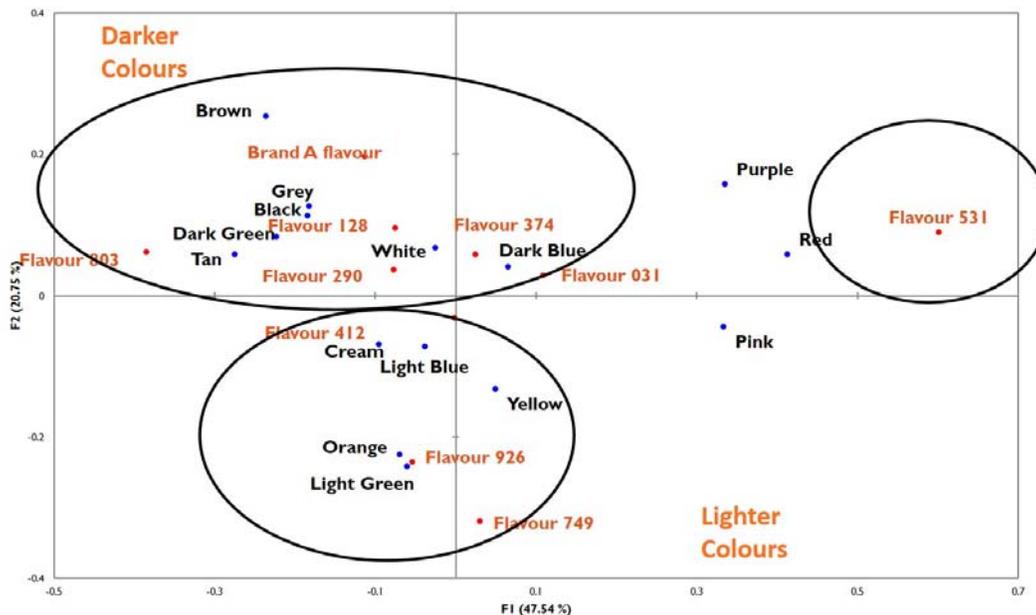
Some flavours such as Vanilla are consistent between first emotional reaction from facial coding and hedonic liking. This is because Vanilla is recognised and was nominated upfront as a favourite flavour even before they started tasting. And Vanilla by its nature as a flavour is emotionally unchallenging, simple and familiar. But other flavours such as nutty flavours do polarise opinion more as the tasting and interview process progresses, because the flavours are harder, darker and more challenging.

Both System 1 and System 2 liking provide learning but neither is right in an absolute sense as they are measuring different aspects of the process of reacting to taste which happens over time and is a mixture of initial emotional response and educating the palette about a taste over the course of sipping a cupful. What we did was to go beyond pure liking and profile and map each flavor in terms of all five senses so that flavourists and marketers had the data to allow them to engineer and optimise cappuccino flavours.

Level 2, the Blind Synesthetic level, creates a series of perceptual maps using correspondence analysis of where the different flavoured cappuccinos are positioned in emotional terms in relation to the five senses. Taking sight represented here by colour as an example we have found colour associations to be highly evocative of emotional flavour directions. In this case we used a colour palette of 100 colours with all different colours and possible shades and respondents are asked to pick up to four in order of importance. We deliberately ask these Synaesthetic sense questions in a projective way as we would in qualitative research, i.e. we ask them to imagine they are living in the world of the flavour and then to describe this world using visual elicitation.

We take into account of the order in which they are picked in the analysis to weight the data that is entered into correspondence mapping.

FIGURE 2, COLOUR ASSOCIATIONS (WEIGHTED ON IMPORTANCE)

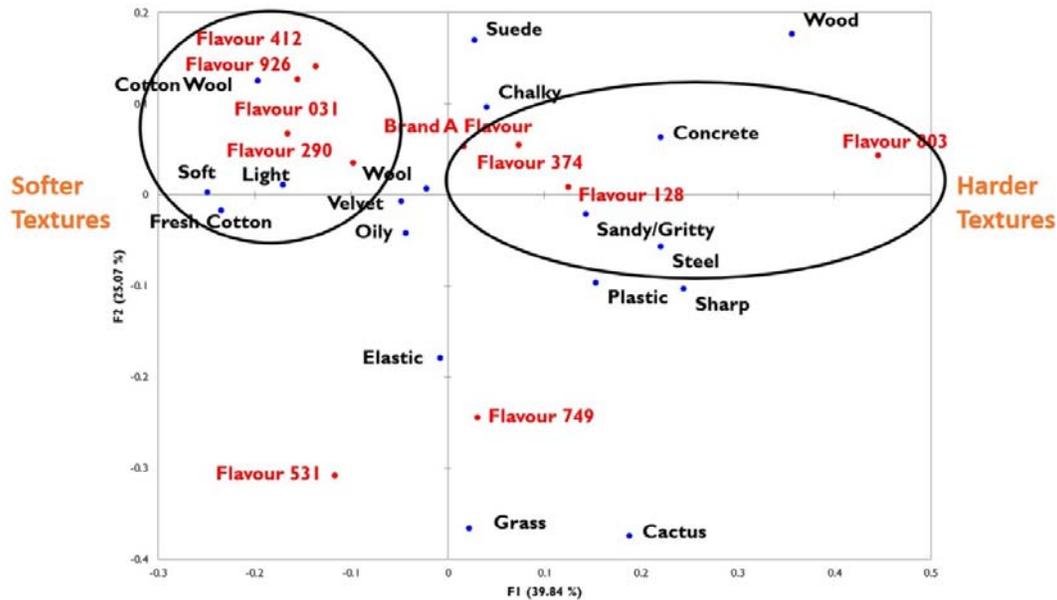


Looking at the results above Brand A is an existing market brand and the flavours that map close to it (group 1) are the more conventional flavours for a cappuccino that evoke darker colours. The other two groups (group 2 and 3) are indulgent and fruity flavours at the bottom and right side of the map which are associated with lighter colours.

Looking at touch as a sense we represent this as visuals of various type of materials. We use visuals as heavily as possible to access System 1 emotional responses and to give respondents the chance to describe the flavour non-verbally. We do get good discrimination between flavours using this method compared with using rating scales in conventional taste testing which does tend to provoke a rational System 2 response, which often results in much weaker or insignificant discrimination between flavours.

Here one can see a divide between the more luxurious flavours on the left being associated with softer textures and harder flavours on the right of the map.

FIGURE 3, TEXTURAL ASSOCIATIONS (WEIGHTED ON IMPORTANCE)



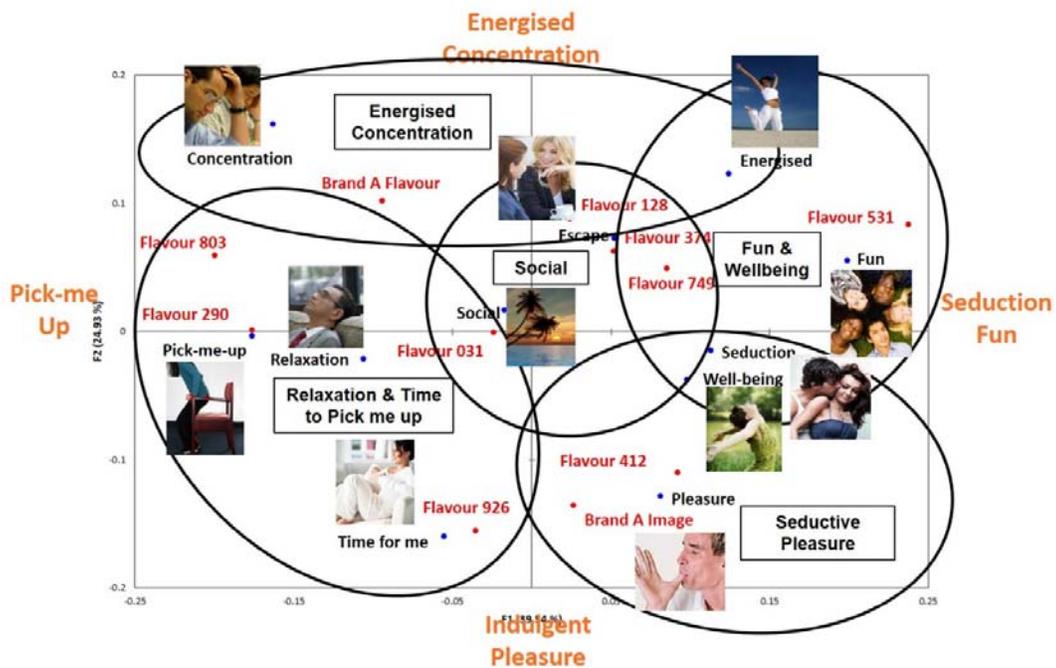
Similar analysis was conducted on the other senses and feelings (visual, adjectival and emotional associations), delivering an in-depth picture of consumers' perceptions of each flavour.

The third level is marketing positioning, again still blind, which tells us how respondents read the needstates that each flavour fulfils out of the context of branding. We identified ten needstates which represent the different positioning directions of current coffee advertising. These are deliberately visualised semiotically so that the response at this level the respondent remains in as emotional frame of mind as possible. We continue to put this in the projective context of the guided dream about the world of the flavour. The ten areas represent the main semiotic cultural trends that we identified in coffee communication from desk research. The social strand in coffee advertising is quite obvious but there are also other important strands not least seduction, as well as themes such as escape, and time for me. We do see five clear need state areas emerging. The ten flavours tested do fulfil a wide variety of the need states, with good discrimination between flavours, and this is vital information for marketing and naming of the flavours, as it enabled us to show exactly where each flavour was positioned.

In mapping the image of Brand A and comparing it to the position of that key market player flavour blind an interesting picture emerges. The image and advertising world of Brand A has elements of pleasure and time for me whereas the blind flavour of the brand is more social and about concentration and relaxation. So in marketing terms we can conclude that this brand can maximise their footprint to cover different need states with different sub-brands in their range and that cappuccino can have a different role in the range from their standard instant coffee. (See figure 4.)

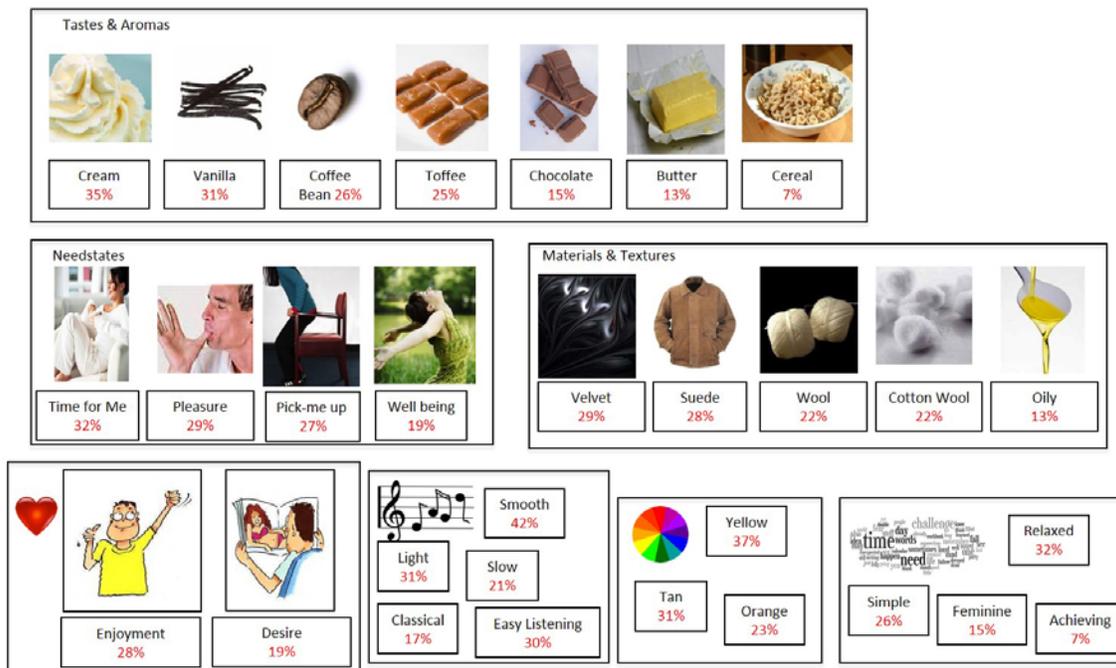
The fourth and fifth levels are to see which flavours they like or dislike and which tastes and aromas they directly associate with the flavours. This is more rational data but linked to emotional mapping and positioning allows flavourists to optimise the flavours to make more emotional impact.

FIGURE 4, NEED STATES MAP



Finally we visualise all the data in summary slides that create a rich picture of the flavours. Here is an example for Vanilla.

FIGURE 5, A PROFILE OF VANILLA



Vanilla has a strong emotional resonance being light and relaxing, enjoyable and easy going. It is unchallenging, simple and familiar. It is an emotionally rewarding flavour twist about indulging oneself with elements of everyday pampering.

HOW RESULTS WERE USED BY MANE

The research results provided key learnings for the flavourists. For NPD and for product renovation projects, flavour houses receive briefings from their customers defining the required parameters for the new flavour proposals. Along with technical and regulatory parameters, those briefings include more and more marketing parameters, such as consumer target, brand positioning and emotional benefits. Creating a thorough understanding of the emotional profile of the flavours in a given product application (in this case instant cappuccino) for a given population (in this case age 18 to 45 years UK white instant coffee users) enables the flavourists to fine-tune flavours to make them more emotionally relevant. Indeed in this case we were able to feed different perspectives into flavour engineering; consumers' emotional perception of the flavour, consumers' perceptions (blind taste associations), consumers' likes and dislikes and experts' description of the flavoured products. These results were rich and accelerated feed-back for the flavourists. Traditionally, they build their know-how on personal experience with the market, a long and time-consuming process of tasting market products and participating in successful and less successful market product development projects.

This Synaesthetic research programme enabled them to integrate consumers' emotional perspectives of the flavours and respond back rapidly with new more creative flavour submissions optimising both liking and desired emotional impact. Mane marketing also used the research insights to design creative universe boards on each flavour, embodying our interpretation of the emotional flavour profiles identified in the research.

FIGURE 6, EMOTIONAL MOOD BOARD EXAMPLE FOR VANILLA



Contrary to the usual boards promoting flavour proposals developed by flavour houses which are usually based on marketers' personal views, those specific boards reflect the actual consumers' sensorial feed-back interpreted by marketers for marketers. They are both instinctive and robust tools to communicate to Mane customer's marketers what the emotional power of the flavour is about.

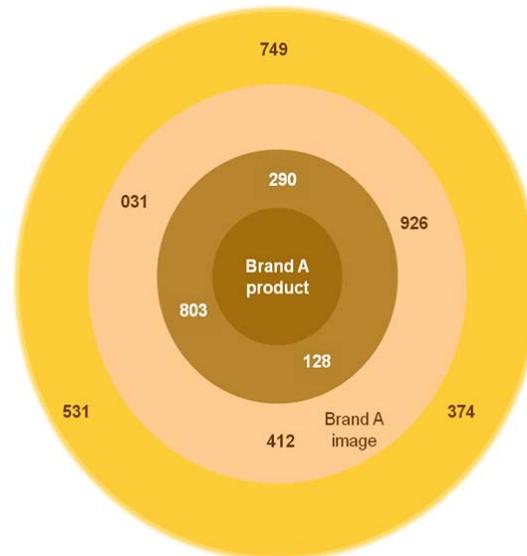
HOW THE RESULTS ARE USEFUL FOR COFFEE MANUFACTURERS

These new flavour insights will make it possible to better align product sensory experience with high-performing marketing mixes. FMCG companies invest heavily to design high-performing brand concepts, packaging and advertising. New product trial rate is usually high for strategic launches, but getting high repeat purchase tends to be more challenging. Indeed the sensory experience must meet expectations and be in line with the packaging and advertising promises to keep repeat purchase rate at high levels. The actual product experience of the consumer is not always congruent with the functional and emotional positioning of the brand. These flavour and emotional insights result in new ways of working for NPD managers, enabling them to design their products not only based on liking scores, but also based on emotional insights of key sensorial dimensions of the product: taste and olfaction.

This cappuccino study also revealed a gap between the emotional perception of the actual experience of the non-flavoured market product when tasted and the image and expectations of the brand. This reveals that the brand could decide to launch a flavoured variant which conveys emotions congruent with the brand image, helping to sustain from a taste perspective the brand promise to the consumers. The brand could also decide to drive its image towards new territories,

for instance younger, bolder and more adventurous, thus recruiting new users. The study provides quantitative insights about the flavour engineering directions which would be aligned with those new grounds.

FIGURE 7, CLOSENESS OR DISTANCE OF 9 FLAVOUR SUBMISSIONS FROM THE EMOTIONAL CORE POSITIONING OF BRAND A PRODUCT



The 412 flavour cappuccino flavour twist would enable Brand A consumers to have a taste experience closer to image of the brand they have in their minds. Flavour submissions 374, 749 and 531 would offer to Brand A consumers a new taste experience, reinforcing the fun, social and well-being aspects or the energy experience, helping to tweak the brand image in those directions. Overall, this Synaesthetic approach to products and flavours gives depth to the marketing decision regarding flavour choices, allowing informed flavour engineering, replacing the classical trial and error approach or choices using judgment based on personal perceptions (which varies from being brilliant to extremely risky).

CONCLUSIONS

Mane wished to carry out this research programme to look at the emotional dimensions of different directions in instant cappuccino flavour twists. Flavoured instant coffee, and cappuccinos in particular, is a growing segment, highly influenced by the coffee shops trends (Starbuck, Café Nero). Coffee advertising has always been emotionally driven, reflecting in particular the social dimension of the beverage. There is clearly an opportunity to play on consumers' emotions via the flavour twist direction of coffee brands.

The psychology of Synaesthesia in this case has allowed us to create sensitive measurements of the emotional impact of cappuccino flavours and their ability to enhance and develop brand positioning. The impact of flavour on a brand is driven mainly by System 1, intuitive and emotional thought. Therefore to create a language that can meaningfully profile flavour impact, it is necessary to measure visual emotional responses, as well as using conventional measures such as hedonic liking. Synaesthesia demonstrates that one sense can be experienced and described in terms of the other senses. We used these principles in designing this study to measure associations with all five senses in a projective question environment.

The key to the study was to understand the emotional impact of each flavoured cappuccino tested, i.e. how each one resonates in consumers' minds and to translate this into flavour formulation learnings. Beyond this from a marketing standpoint (name, positioning), we were able to maximise the expected impact by matching the most congruent flavour with each identified positioning based on need states.

ACKNOWLEDGEMENT

We would like to thank our colleague James Patterson of QRi Consulting Ltd. who contributed to writing this paper and Acumen Fieldwork Ltd. who carried out the fieldwork.

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