

Daymon

INTERNATIONAL DEVELOPMENT CENTER

SENSORY ANALYSIS

April, 2023



WHAT'S ON THE AGENDA

- Sensory Analysis
- Test Types
- Questionnaire Design
- Sensory Assessors
- Sensory Test Organization
- Report
- Retailers and Sensory Analysis
- New Technology
- Summary

SENSORY ANALYSIS

SENSORY ANALYSIS

FIVE SENSES

- Scientific method to measure and analyze the responses perceived through the human senses
- Critical to retail companies: internal or external
- Used on:
 - Consumer research
 - New product development
 - Quality control and quality assurance
- Assessment of the sensory attributes:
 - Consumers or trained assessors



FIVE SENSES

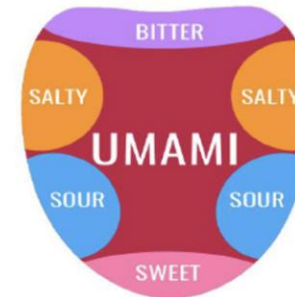
USED BY SENSORY EVALUATION

1. Vision

- 1st point of contact with the product
- branding, packaging, labelling information will influence the taste perception

2. Hearing - Essential in the perception of freshness and texture

3. Taste - Perceived on the tongue, palate and throat via taste buds



4. Smell

- Response from airborne volatiles perceived in the nose
- To reduce fatigue, use quick, short, “bunny” sniffs and smell the elbow or back of the hand to clear
- Powerful sense, can relate you directly to solid emotional links

5. Touch - Includes the mouthfeel and texture of the products (e.g. smooth, thick, creamy)



TEST TYPES

TEST TYPES

THREE MAIN AREAS

1. Description:

- Describe sensory characteristics
- Quantify differences between products

- *What does the product taste like?*
 - *Salty, Sweet, Crunchy...*
- *How does a change in formulation, packaging affect its attributes?*



TEST TYPES

THREE MAIN AREAS

2. Discrimination:

- Determine if there is a perceptible difference between two or more products

- *Would people notice the difference?*
 - *Yes, No...*
- *How significant is the difference?*



TEST TYPES

THREE MAIN AREAS

3. Acceptance tests (Preference or Hedonics):

- Evaluate product acceptability
- Determine if one product is more acceptable than others

- *How much do people like this?*
- *Is it acceptable?*



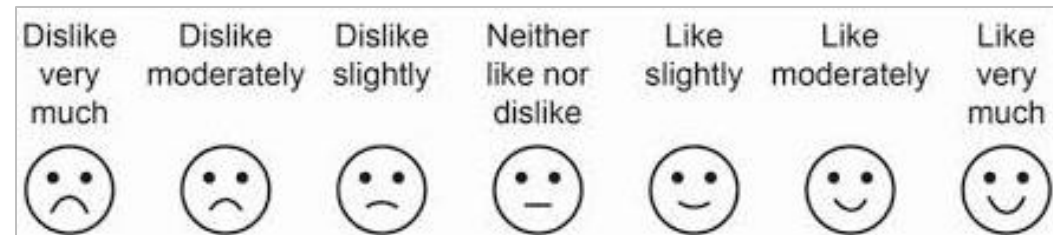
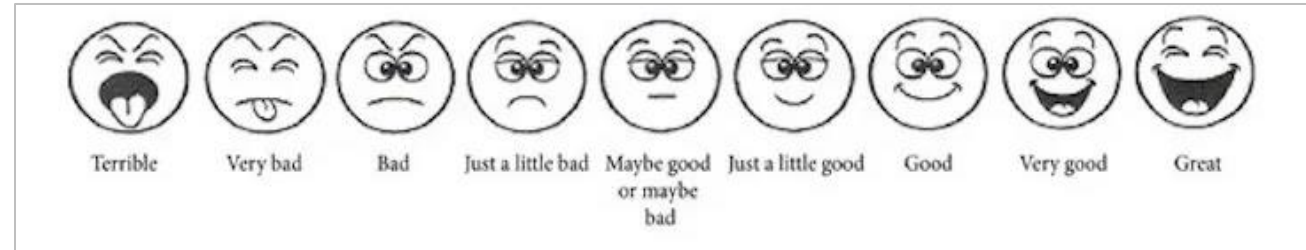
TEST TYPES

ACCEPTANCE TESTS

✓ Hedonic rating

The assessor indicate the extent of liking from a (e.g) nine-point hedonic scale:

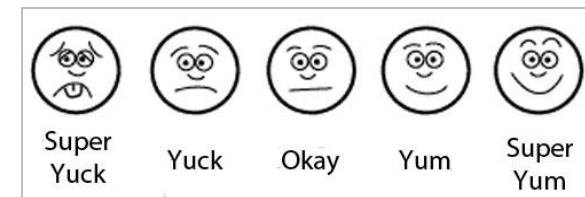
- 9 - Like extremely
- 8 - Like very much
- 7 - Like moderately
- 6 - Like slightly
- 5 - Neither like nor dislike
- 4 - Dislike slightly
- 3 - Dislike moderately
- 2 - Dislike very much
- 1 - Dislike extremely



✓ Panel required

Untrained panel - at least 30 people

It could be the usual 'in-house' panel.



QUESTIONNAIRE

QUESTIONNAIRE

QUESTIONS

Collect information, that can be easily used, on paper or computer-generated.

Sensory properties to be assessed:

- Colour
- Appearance
- Smell
- Aroma
- Taste
- Flavour
- Temperature
- Weight
- Texture
- Etc...

Smell ≠ Aroma ≠ Taste ≠ Flavour

Smell: perception through the nose

Aroma: obtained after placing the food in the mouth

Taste (sour, sweet, salty, bitter, umami): detected through the tongue



Flavour: obtained through the sum of 3 properties (smell, aroma and taste)

What differentiates one food from another is the flavour

Taste the food with eyes closed and nose covered - can only judge if the food is sweet, salty, bitter or sour (taste)

QUESTIONNAIRE DESIGN

TYPE AN ORDER OF QUESTIONS

Questions can be:

- Closed-response
- Open-ended questions

The order is crucial:

- An introduction to the survey is essential
- The first question should be easily answered
- Essential questions in the beginning
- Questions should be short, clear and understandable
- Avoid technical or specialized sentences
- Questions must be easy to read



Data generated will require statistical analysis

SENSORY ASSESSORS

SENSORY ASSESSORS

TYPES OF ASSESSORS

a) Specialist Assessor

- Significant experience in a specific type of food (e.g. wine, cheese, coffee)
- Only their answer needed

b) Trained Assessor

- Remarkable ability to detect a sensory property
- Have practical and theoretical training
- 7 to 15 tasters needed

c) Consumer Assessor

- Only used for hedonic tests (never discriminative or descriptive)
- Regular consumers of the product
- Minimum number: 30



GOOD SENSORY PRACTICES

PANELISTS, SAMPLES, TECHNIQUES AND METHODS

Panelists

- Focus on the test, avoid any distraction
- Be confident in your initial judgment
- Don't eat, drink, smoke, chew gum (within 30 minutes before the tasting)
- Don't wear perfume, don't use lipstick or lip balm
- Rest and cleanse palate. Don't rush through the assessment

Exclude from the tests:

- Anyone temporary ill (e.g. colds, upset stomachs, etc)
- Pregnant women (pregnancy may affect taste perceptions)
- Color-blind



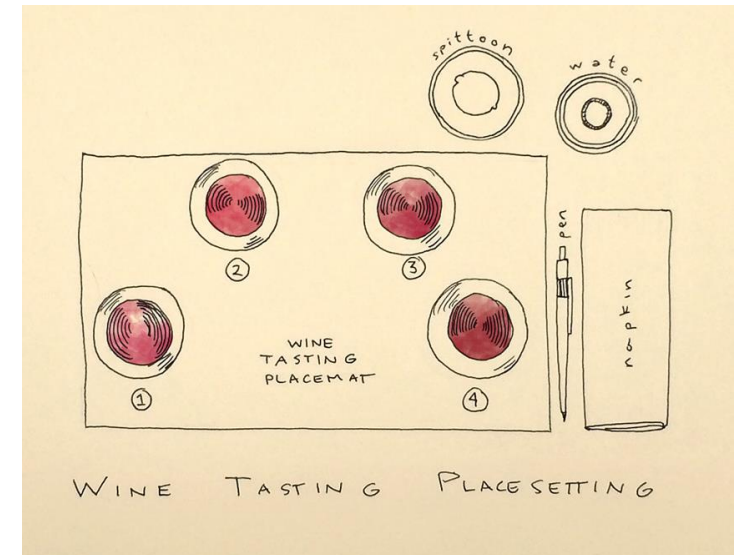
SENSORY TEST ORGANIZATION

SENSORY TEST

ORGANIZATION AND PROCEDURE

Organization

1. Decide the type of information you want to collect
2. Draw the questionnaire. Print the QR codes or record sheets
3. Calculate the amount of time and product required. Include some extra samples just in case...
4. Code the containers
5. Prepare the assessment area, providing palate cleansers, cups, QR codes or pencils, etc
6. Prepare the samples and check if all the requirements are met



SENSORY TEST

ORGANIZATION AND PROCEDURE

Procedure

1. Check the product appearance
2. Pick up the plate or swirl the cup and take 2-3- short sniffs
3. Taste the food, and ensure all mouth surfaces have been contacted
4. Breath air in over the sample so the aromatics can reach the olfactory area
5. Pay attention to chemical irritation sensation (e.g. heat, astringency)
6. Check if there is any aftertaste present



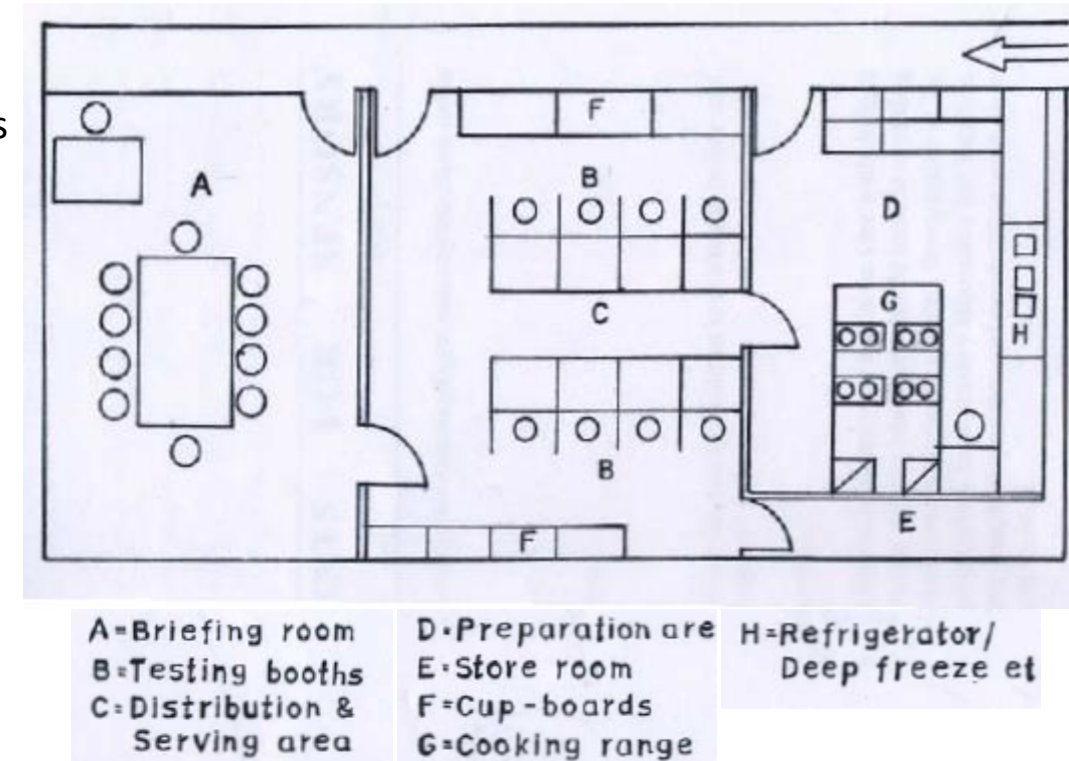
GOOD SENSORY PRACTICES

ENVIRONMENT AND EQUIPMENT

Tasting area:

- should be comfortable and quiet, without any interruptions or distractions
- Free of any strong odors
- Constant light intensities
- Individual booths to avoid the suggestion effect
- Ventilation to maintain constant temperatures and to remove odors. Room temperature around 18°C to 23°C
- Tasters must not receive information before the tests, to avoid the expectation error
- The assessments should be in the morning (10 a.m. - 11 a.m.) or in the afternoon (4 p.m. - 5 p.m.)

Separate from the preparation area



GOOD SENSORY PRACTICES

PANELISTS, SAMPLES, TECHNIQUES AND METHODS

Samples

- Guarantee they are safe. Use clean, odour-free and approved materials
- Use codes with 3 or 4 digits to code the samples
- Same size, cooked in the same way, at the same temperature and homogeneous
- Provide suitable palate cleansers, (e.g. mineral water, apple slices, plain biscuits)

Techniques and Methods

- Start with the least flavored product
- Allow sufficient rest time between samples



REPORT

REPORT

REPORT EXAMPLE

Accurate reporting is essential as it is the basis on which decisions are taken

The report should include:

1. Organoleptic Test Report
2. Characterization of Samples
3. Photos
4. Score
5. Data analysis
6. Remarks
7. Conclusion
8. Company Approval

Daymon	SENSORY TEST REPORT <small>(example)</small>	Document Reference:	QA11202102
		Date of issue:	01.11.2021
		Review date:	

FINAL SENSORY REPORT N°
(TEST TYPE)

1. Organoleptic Test Report

Product:	
Project objective:	
Category:	
Sensory specialist:	
QA Lead:	
N.B. of Parallelists:	
Test Method:	
Test Date:	
Location:	

2. Characterization of Samples	
Sample 1	Sample 2
Sample description:	Sample description:
Supplier:	Supplier:
Brand:	Brand:
Type of packaging:	Type of packaging:
Reception Date:	Reception Date:
Reception temperature:	Reception temperature:
Expiry date:	Expiry date:
Lot:	Lot:
Comments:	Comments:

3. Photos

<small>Fig.1 – Sample 1</small>	<small>Fig.2 – Sample 2</small>	<small>Fig.3 – Booth</small>

4. Score

Summary of the organoleptic test results:	Graphs:				
	Sample	Appearance	Odor	Texture	Flavour

5. Data Analysis

Using a t-student evaluation test, with a 5% error, when comparing samples, it's possible to observe that:	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td></td> <td style="text-align: center;">Sample 1</td> <td style="text-align: center;">Sample 2</td> </tr> <tr> <td style="text-align: center;">Sample 1</td> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> </tr> <tr> <td style="text-align: center;">Sample 2</td> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> </tr> </table>		Sample 1	Sample 2	Sample 1	-	-	Sample 2	-	-
	Sample 1	Sample 2								
Sample 1	-	-								
Sample 2	-	-								

6. Remarks

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7. Conclusion

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Company Approval	Date
 Name(s) and Title(s)	_ _ _

RETAILERS AND SENSORY ANALYSIS

HOW DO RETAILERS PERFORM TASTINGS

TESCO UK

Criteria tested:

1. Taste
2. Preparation process – user friendly
3. Packaging convenience

Platforms involved:

1. Product Assessment Centres (North and South of UK) w/ consumers
2. Tesco Home panel
3. Listening sessions and focus group
4. Expert tasters (Tasters are chosen following a series of activities, designed to assess each of their senses, and complete 2 months of training before they start product testing.)



Source: <https://thecomplainingcow.co.uk/how-to-be-a-tesco-tester/>

HOW DO RETAILERS PERFORM TASTINGS

AUCHAN FR

Reformulations of products/recipes:

1. Nutritional composition of our food products in line with France's national healthy nutrition program goals
2. Testing new recipes phasing out un-desirable substances reformulating recipes with more fiber and protein, and cutting back on salt, sugars and saturated fatty acids
3. Clean-label products that are just like homemade – they contain simple ingredients and nothing else
4. For customers with special dietary needs, we've also launched Mieux Vivre, a vegetarian range that's gluten-, lactose-, and nitrite-free

Panel:

1. Experts
2. Consumers



Source: https://www.auchan-retail.com/wp-content/uploads/2021/06/0803_AUCH_2106002_RA_GB_MEL.pdf

HOW DO RETAILERS PERFORM TASTINGS

SONAE PT

Actions on sensory analysis:

1. Internal audit pool/ panel for tastings
2. **Sense Bus** travels across the country and has 2 individual tasting booths, to collect consumers feedback
3. **Mini Lab** is a tasting spot, for sensory analysis purpose, located in-store and focusing on consumer's feedback

Panel:

1. Consumers
2. Trained tasters / Experts



Source: <https://www.sonae.pt/pt/inovacao/projetos/sense-bus-e-minilab/>; <https://www.sonae.pt/pt/inovacao/projetos/analises-sensoriais-continente/>

NEW TECHNOLOGY

TYPE OF EVALUATION

STATIC VERSUS DYNAMIC

Dynamic Method:

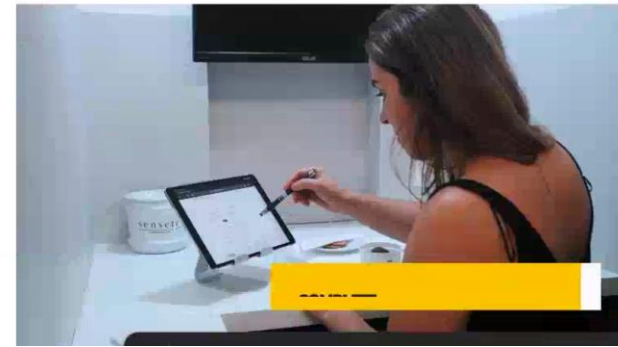
Access the evolution of different attributes throughout consumption.

Participants:

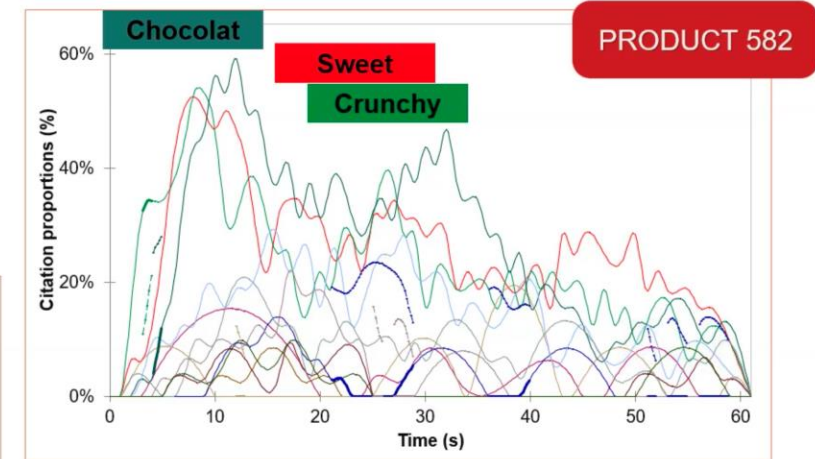
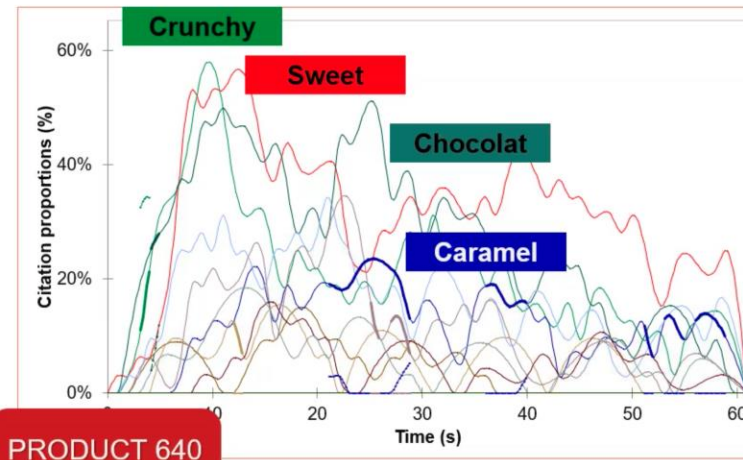
Select the attributes considering their applicability throughout the evaluation period.

Variants:

Allows the evaluation of one dominant attribute or simultaneous attributes.



How the samples were perceived?



14

TYPE OF EVALUATION

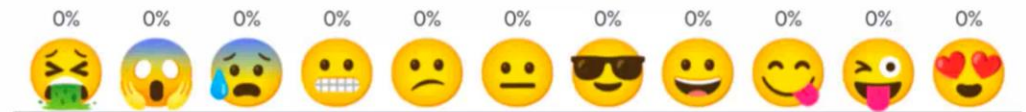
TEMPORAL EMOTIONAL EVALUATION

Replace hedonic attributes by emotional related terms

- Help to discriminate between products
- especially comparing products of similar and high sensory quality
- Where there are no differences in the acceptancy level
- Better prediction of the consumer choice

Active	Eager	Guilty	Peaceful	Tame
Adventurous	Energetic	Happy	Pleasant	Tender
Affectionate	Enthusiastic	Interested	Pleased	Understanding
Aggressive	Free	Joyful	Polite	Warm
Bored	Friendly	Loving	Quiet	Whole
Calm	Glad	Merry	Satisfied	Wild
Daring	Good	Mild	Secure	Worried
Disgusted	Good natured	Nostalgic	Steady	

Eating this waffle makes me feel...

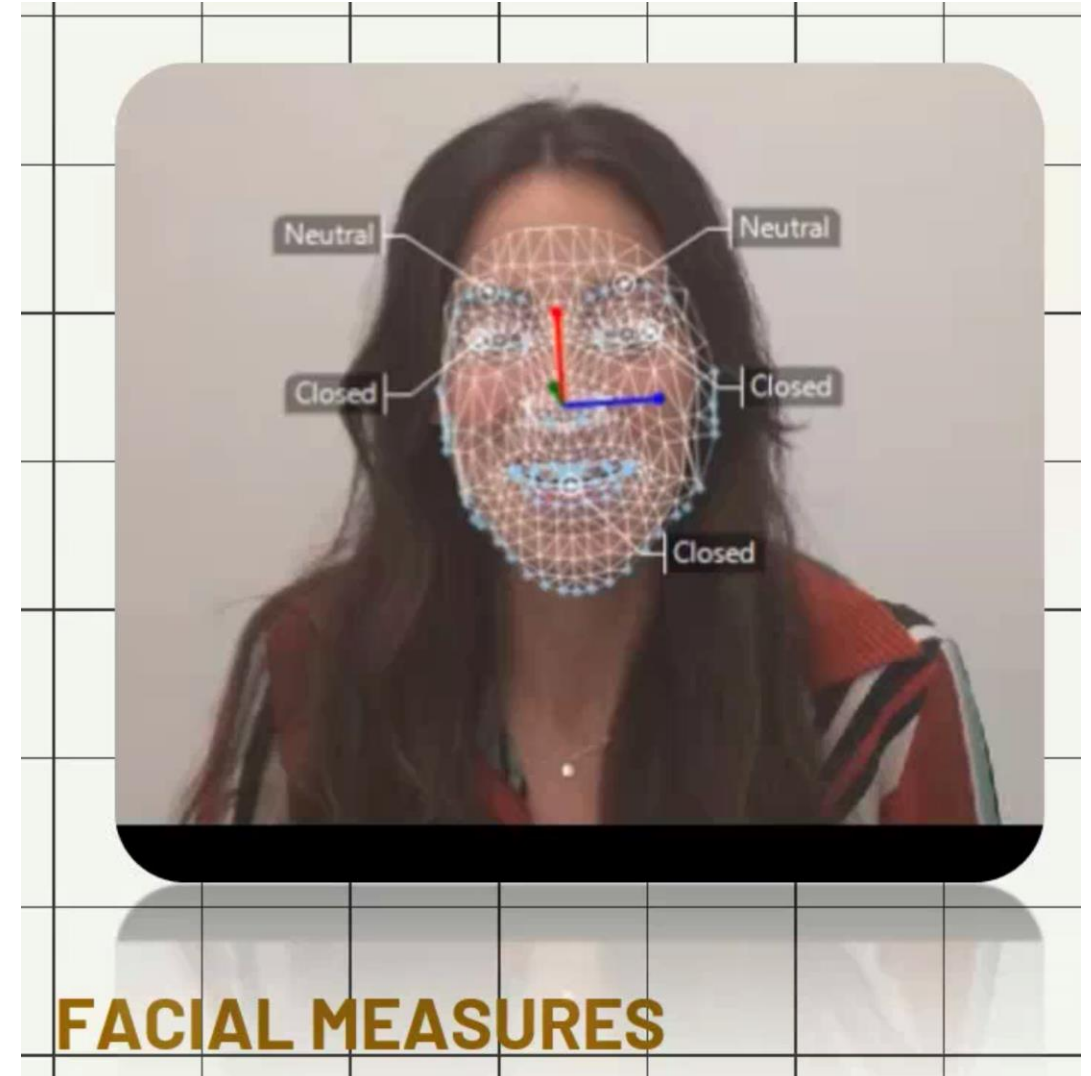
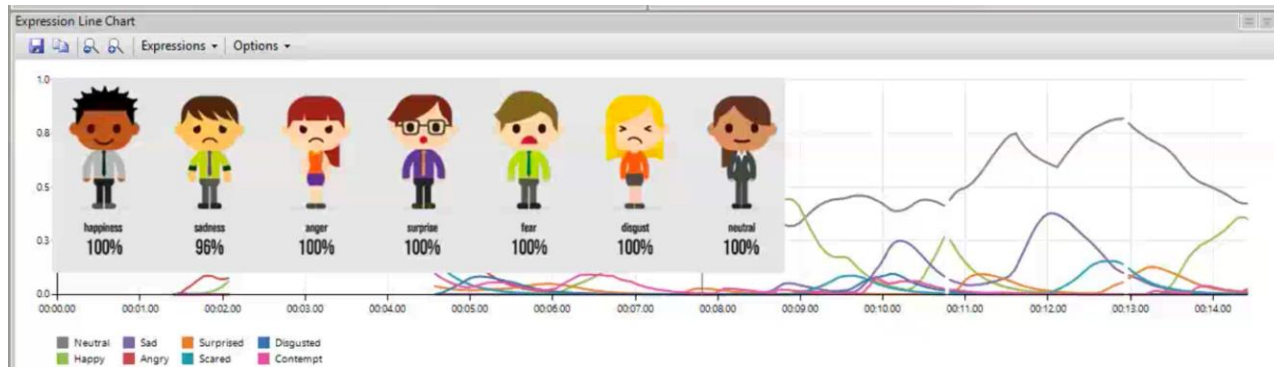


TYPE OF EVALUATION

TEMPORAL EMOTIONAL EVALUATION

Temporal Evaluation of Facial Emotions

- Identification of the emotion intensities elicited by the products at each analyzed time frame.
- Standardize the temporal measurement of facial Expressions.
- Use facial behaviour – Micro expressions
- May complete questionnaire data



SUMMARY



SUMMARY

- Sensory Analysis is very relevant for product launching and reformulation
- It's important that the process is trustworthy and reliable
- It can be interesting to use sensory analysis to build the short lists of suppliers in a Procurement / Sourcing phase
- There is new technology applied to sensory analysis that can bring richer inputs

QUESTIONS?

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