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MEAT NEURO TASTING CASE STUDY

REVEALING DISCOVERIES THROUGH MEAT NEURO-SENSORY EVALUATION

WE ARE THIMUS

We collect data that traditional market research does not capture.
We do this by successfully integrating neuroscience and explicit data.
We explain and predict the complex relationship between humans and food.

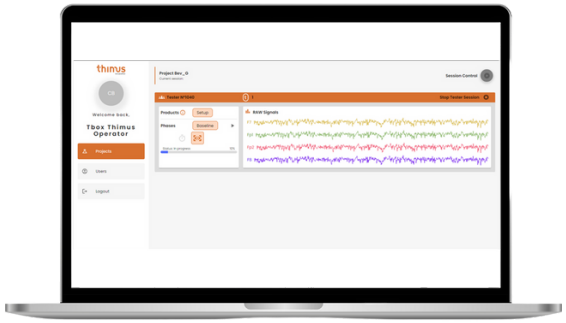
Our methodology eliminates the biases of stated preferences.
Cultural neuroscience represents the best evolution of sensory analysis.

Thimus has made cultural neuro-sensory analysis portable, robust, scalable thanks to our proprietary SAAS platform: the T-BOX.

METHODOLOGY

The EEG is a non-invasive device: it is applied to the head of the participant using a strip with integrated electrodes, in which gel is applied to facilitate recording. Once worn, the tester takes a seat at the tasting station and follows the visual indications that appear on the screen.

The HUB is an electronic device responsible for transmitting the signal detected by the EEG. It is powered by an electric cable, equipped with antennas for signal amplification and connected to the Internet. It must be located near the EEG and can connect to a maximum of 3 devices simultaneously.



The cloud T-BOX platform is where the real magic happens. Users with a login profile can configure projects, add testers, acquire brain data and explore past projects and their results. We have implemented export of data both in easy-to-read PDF format or in CSV files for further analysis.

PROJECT AIM

- To understand how different alternative meat burgers compare to a traditional meat burger in terms of cognitive and emotional states and explicit judgements.
- To create alternative meat products that are accepted by customers, it is crucial to understand how these products are perceived both on the **explicit** and the **implicit** level throughout the different sensorial stages.

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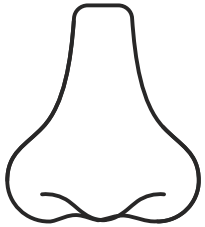
PROTOCOL

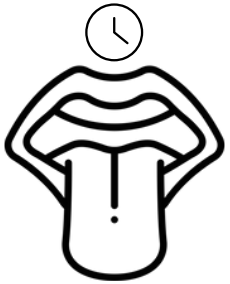
We tease apart the experience into six distinct phases, each of which is analyzed according to the specific cognitive states, measured by EEG.
The method provides the architecture of the entire sensory experience through collected neurophysiological data in addition to traditional declarative data.

Look of the sample



Smell

Taste



Aftertaste

Questionnaire

Methodology note:
The procedure started with one training sessions with a corn cracker to familiarize with the instructions, then each participant tasted the five samples of burger in a counterbalanced order.

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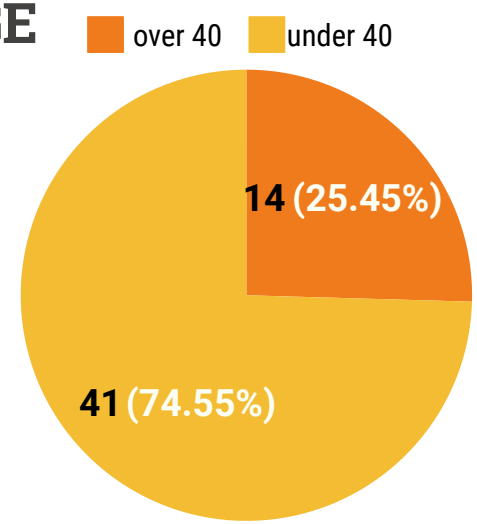
TARGET GROUP

OVERALL: 55

26
Male

29
Female

AGE



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METRICS

1

FRONTAL ASYMMETRY-LIKEABILITY

This index evaluates the natural balance of approach (associated with acceptance and positive emotions) and avoidance (withdrawal, negative emotions) of an individual about a task.

2

COGNITIVE WORKLOAD-FAMILIARITY

Mental activity is based on the use of working memory. This can be caused by a particular task at a given instant (Cain, 2007). It is therefore the set of mental processes that mediate the performance in perceptual, cognitive and motor tasks.

3

ENGAGEMENT

It represents emotional states, including motivation levels, excitement, attention, and interest experienced during the performance (Berka et al. 2007).

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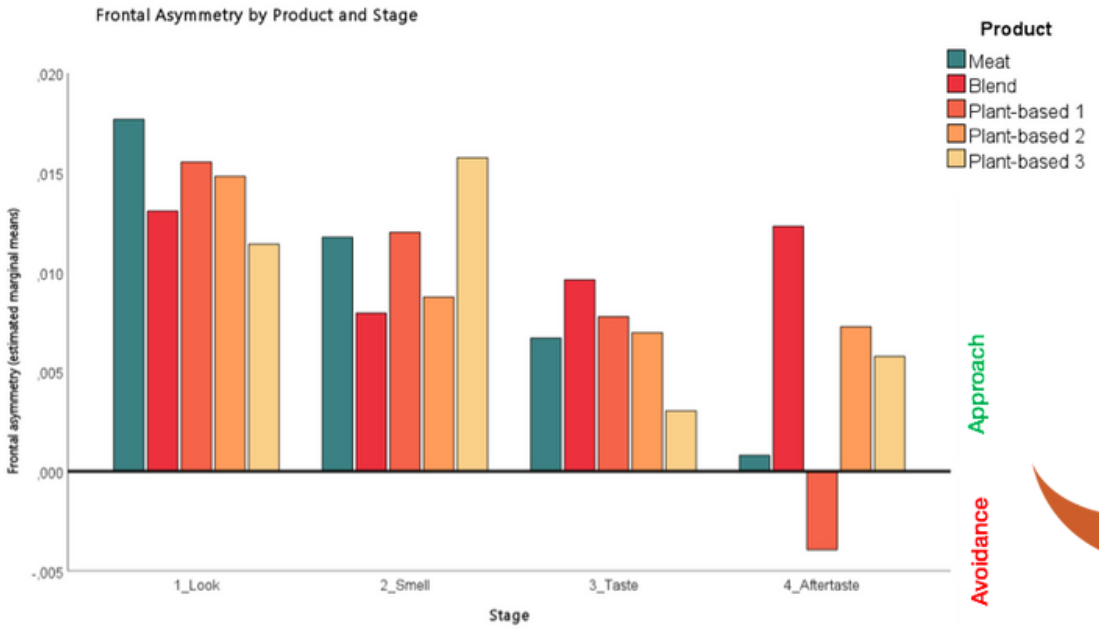
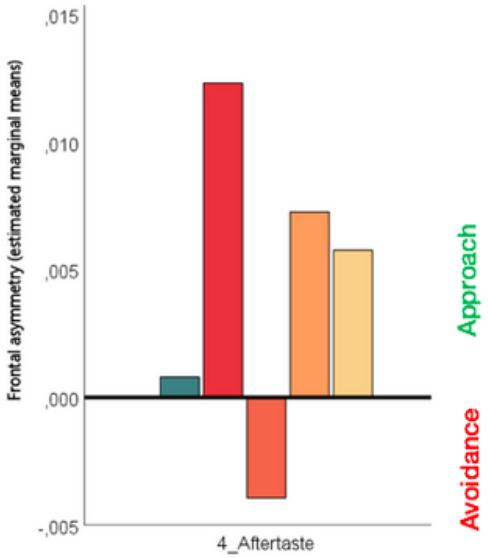
FRONTAL ASYMMETRY

Burgers	
A	Meat
B	Blend
C	Plant-based 1
D	Plant-based 2
E	Plant-based 3





All products fall into the approach zone, which indicates an overall positive perception for all the burgers.
An exception is made for the aftertaste of the Plant-based 1 burger (C), which falls into the avoidance zone.

The graph above displays trends found in FA between products and across stages.

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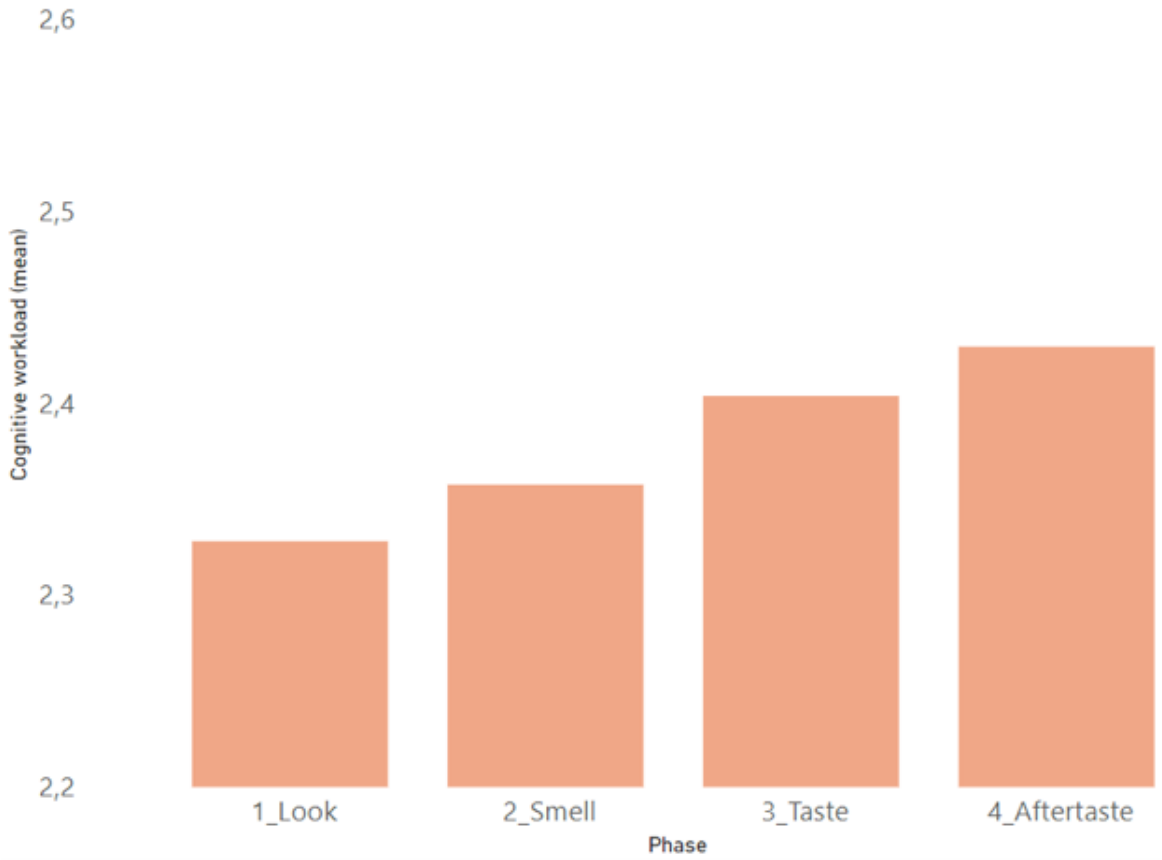
COGNITIVE WORKLOAD

The amount of cognitive workload tends to increase across the stages with a linear trend, irrespective of the product. This suggests that in the aftertaste stage participants are processing a higher amount of sensory and cognitive information, and this stage may be especially relevant for the evaluative process.



The graph above displays trends found in cognitive workload across stages

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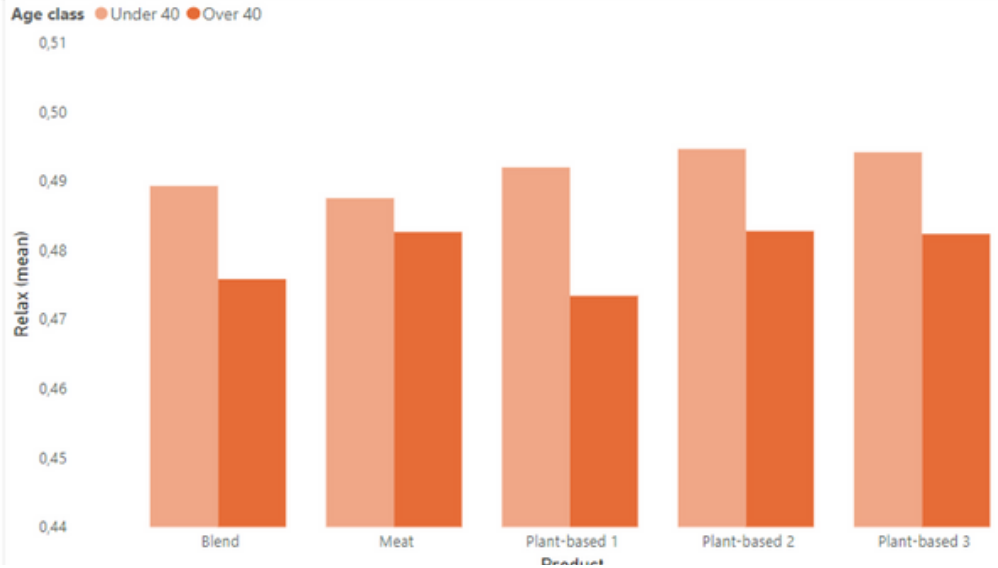
RESULTS BY AGE CLASS

Participants over 40 y.o. have higher approach disposition than younger participants in the look phase.



On average, the Plant-based 1 burger (C) tends to be perceived as less relaxing than the benchmark, the Meat burger A (marginal effect).

The graph above displays trends found in relax between products and age classes.

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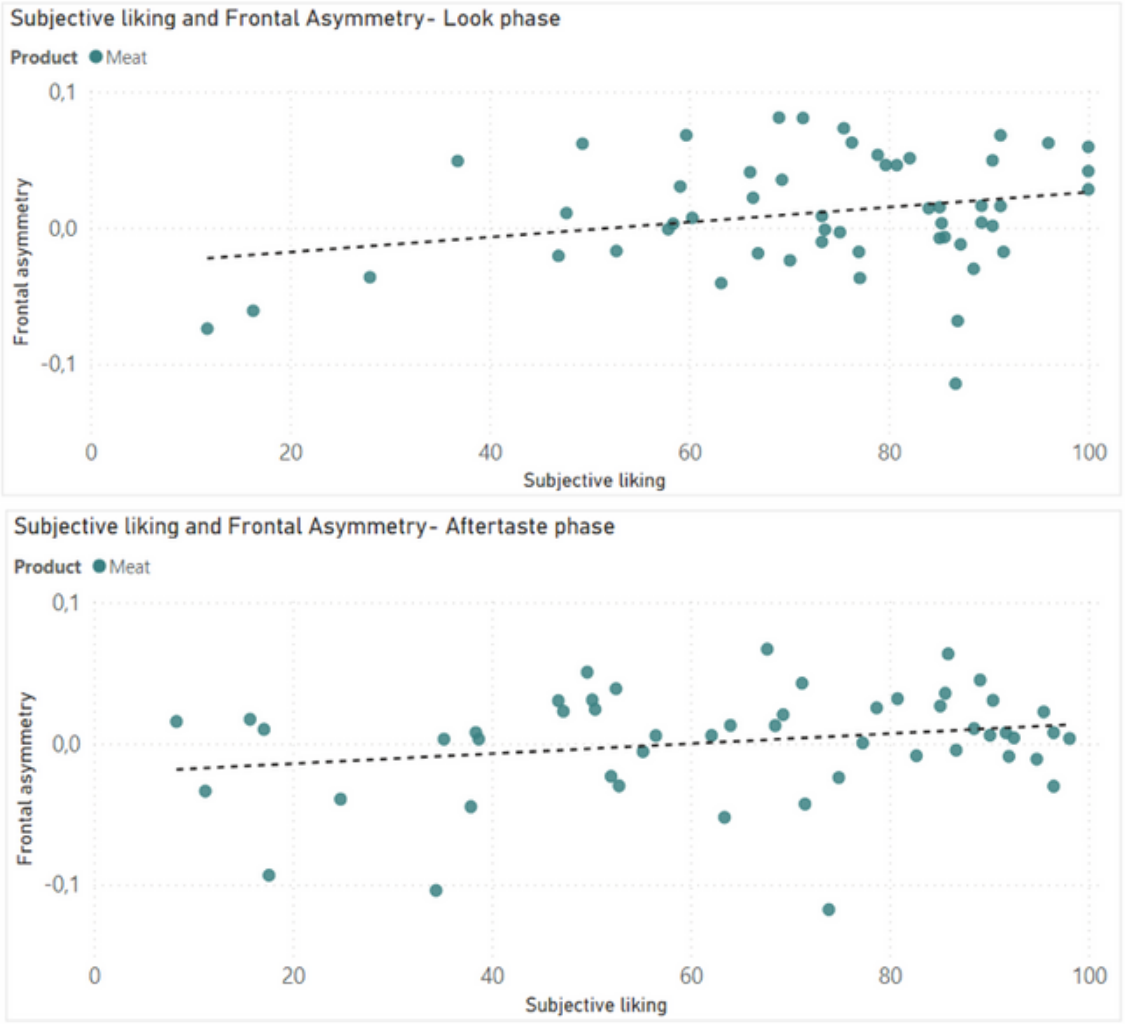
CORRELATIONS



The above graphs demonstrate data which is statistically significant: * p. <0.05

Burgers

A	Meat
B	Blend
C	Plant-based 1
D	Plant-based 2
E	Plant-based 3

Considering the Meat burger (A), the overall liking ratings positively correlate with the Frontal Asymmetry index recorded during the **look** and **aftertaste** stages

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INSIGHTS

1

The Plant-based 1 burger (C) stands out on several occasions. Combining the results obtained from the **neural** and the **declarative** data, the Plant-based 1 burger (C) is outlined as follows:

- It is perceived as more **unfamiliar** than the other alternative burgers, especially for male participants
- It evokes **discomfort**, especially in participants over 40 years old
- It is perceived as **less engaging** by participants under 40 years old
- All its sensorial qualities are explicitly **disliked**
- It is the only alternative burger where the hedonic apreciation significantly decreases for increasing levels of **neophobia**.

2

The Blend burger (B) appears to be a promising product:

- It is the only burger to be more appreciated than the reference Meat burger (A) when participants are asked to explicitly rate the **hedonic preference** for the **taste**.
- There is some marginal evidence suggesting that neophobic participants could implicitly develop a favourable motivational disposition towards the Blend burger (B) despite its novelty.

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