

Taste the difference – and say it!

The role of sensory language in the multimodal semiotic cocktails of food labelling and web-store presentations

and how it could be enhanced



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Content:

- ☐ **Brief presentation of research problem and agenda**
- ☐ **A few “taste sample” from ongoing pilot research**

PARADOX



If Rozin is right in maintaining that

“sensory properties are the most powerful influence on [food] choice, in most situations” (2007: 17)

how come explicit sensory information is so sparse on the packaging and in web-store presentations of most present-day commercial food products?

(with some partial exception, e.g. wines if we include the back of the bottle)

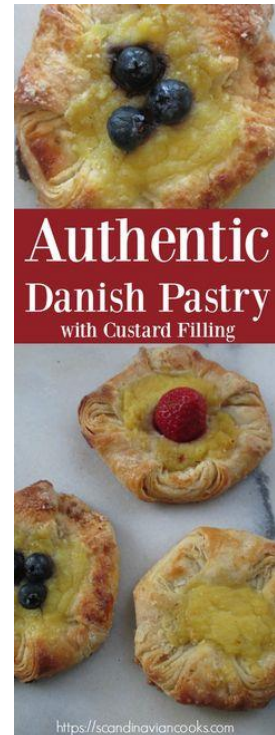
The packaging front (PDP) of food products says a lot



CO₂ neutral



GLUTEN FREE



...but not about the expectable taste and eating experience

Bresson (2017) and Saltari (2017) found that Sensory Descriptions (SDs) on the PDP tend to be either:

Absent



Meta-sensory descriptions, e.g. “delicious “,
“great new taste”, “taste the difference”

Generic descriptions, e.g. “mild“, “creamy”,
“hot”, “garlic”, “chili”

Less common are: More elaborate and individualized descriptions such as:

“freshness and bitterness in a delicious, subtly spicy balance”



Consequences:

- Backgrounding of taste and eating experiences as a in-store competitive benchmark
- Lower consumer focus on and willingness to pay for better taste – leading to less demand for it
- Less encouragement for food manufacturers to develop unique and tasteful products
- Loss of potential sales opportunities on domestic and export markets

Manufacturers and retailers are getting increasingly aware of that



"We want to add **MORE TASTE** to your daily life"



But how?

One possible path:

- ***User-driven generation of a more powerful language*** in which taste and eating experiences can be articulated and compared (which has so far been a case for experts, cf. Hyldig, 2010; Lawless & Heymann, 2010). Possible (re)source: The 1.7 million consumer members of Coop Denmark
 - ***Foregrounding selected user-generated sensory descriptions (SDs)*** on product packages and in web-store presentations and assessing the effects on choice
 - ***This also means: Going beyond traditional Sensory Marketing*** (e.g. Hultén, Broweuss & Van Dijk, 2009; Krishna & Schwarz, 2014) where a major concern is the sensory properties of the design elements in their own capacity rather than the semantic (conceptual) content encoded into them, including more subtle sensory cues
- ⇒ ***Pilot work by Coop Analytics and CBS CogLab on both user-generation of new SDs (generated by between 51 to 200 consumers for cheese, apples, popcorn, mayonnaise) and testing the effect of new as well as existing SDs***

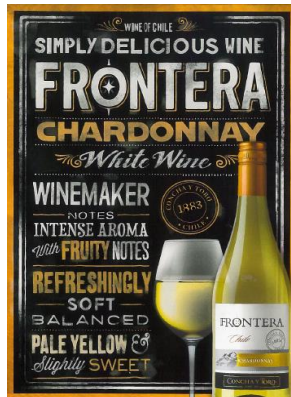
Preview of one ongoing study

(part of broader pilot work at CBS CogLab and Coop Analytics)

Working Title: "Swapping the sensory description up front:
A case study of wine, cheese, and olives"

Target Journal: *Appetite*

Contributors (so far): Viktor Smith, Daniel Barratt, Laura W. Balling, Kristian Roed Nielsen, Alexander U. Andersen



Rationale:

- ❑ A positive effect of foregrounding verbalized sensory descriptions (SDs) on consumer expectations to the taste of food products and product choice has been demonstrated in previous studies (e.g. Swahn, 2012; Imm, Lee & Lee, 2012)
- ❑ The above-mentioned studies maintained a high degree of control for the effect of extraneous variables, yet on actual (physical/electronic) product shelves the SD will be up against a substantial amount of “noise” from multiple factors such as general packaging design, master brands, the relative visual prominence of the SD, etc. (see e.g. Mueller & Szolnoki, 2010).
- ❑ The goal of this exploratory study was to investigate a more realistic competitive situation between three pairs of already existing and mutually substitutable products in order to assess if an effect of the SD could be detected even against the background of such extraneous variables through the use of eye-tracking.

Key hypotheses: H1: The presence of an SD on the packaging front (PDP) will correlate positively with product choice. **H2:** The effect will be proportional with fixation time on the SD. (In addition, possible correlations between fixation time on other key design elements and product choice were likewise within the scope of interest.)

Stimuli sets:

Three product pairs were selected from product categories for which consumers' pre-expectations to specific sensory qualities could be expected to be relatively indetermined in advance across products/brands.

- ❖ 2 x Bag-in-box Chardonnay white wines from Chile one of which carried SDs on the front. Difference in brand identity: Low (mainstream brands). Visual prominence of SD: High.
- ❖ 2 x Green olives with garlic filling from Greece one of which carried an SD on the front. Difference in brand identity: High (Irma v. Gestus). Visual prominence of SD: Low.
- ❖ 2 x Manchego Cheeses from Spain one of which carries a sticker with selected taste evaluations (SDs) generated in a Coop test. Difference in brand identity: Low (to Danish consumers). Visual prominence of SD: High. Unlike the other products, the SD was not an integrated part of the overall design but “added on” as a sticker.



Overview of target products

	White Wine (x 2)	Green Olives (x 2)	Manchego Cheese (x 2)
Visual prominence of SD (on product with SD)	HIGH	LOW	HIGH
Difference in general brand identity between target products	LOW	HIGH	LOW
Integration of SD in overall product design	HIGH	HIGH	LOW

Setup: Simulated e-shopping situation offering 6 binary product choices (the 3 targets and 3 fillers/distracters) monitored by eye-tracking. **Basic instruction:** *“You are shopping for a weekend trip with some friends. Pick the products you prefer, as long as they taste good” (= priming for sensory cues)*

Participants: 50 Danish speaking CBS students and administrative staff members. Age: 19-70 (mean age 31). Gender distribution: 22 male, 28 female.



Vælg produkt A eller B

Valget er op til dig, *bare det smager godt!*

A



7⁰⁰

2 l / ex. pant.

Ingredienser: Vand, sukker, kuldioxid, farvestof (karamel E150d), surhedsregulerende middel (E338), naturlige aromaer, koffein.

Næringsindhold pr. 100 g: Energi: 188 kJ / 45 kcal. Protein: 0 g. Kulhydrat: 11 g. Fedt: 0 g.

Producent: Bryggeriet Vestfyen.

B



12⁰⁰

2 l / ex. pant.

Ingredienser: vand, sukker, kuldioxid, farvestof (E150d), surhedsregulerende middel (E338), aroma (herunder koffein).

Næringsindhold pr. 100 g: Energi: 176 kJ / 42 kcal. Protein: 0,0 g. Kulhydrat: 10,6 g. Fedt: 0,0 g.

Producent: Coca Cola.

A



16⁰⁰

500 g

Oprindelse: Sweetpoint, Holland.

Sort: Ramiro, Kl II.

B



9⁰⁰

500 g

Oprindelse: Tyrkiet.

Sort: Kapia, Kl. I.

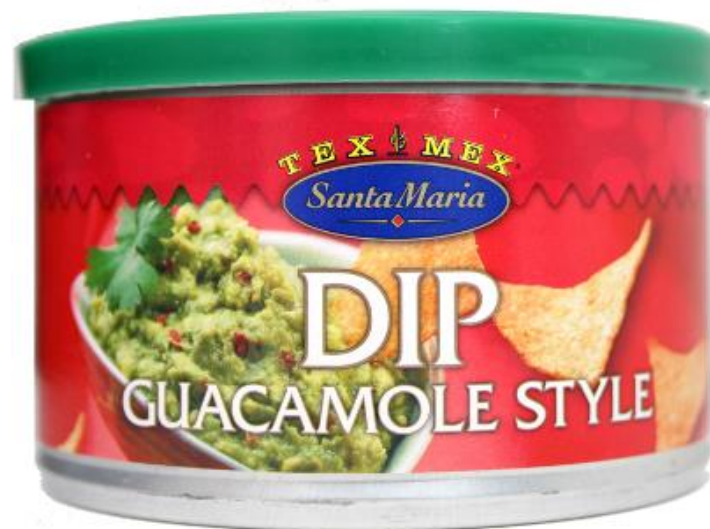
A

22⁰⁰

227 g

Ingredienser: Avocado, løg, salt, koriander, hvidløg.**Næringsindhold pr. 100 g:** Energi: 690 kJ / 165 kcal. Protein: 2 g. Kulhydrat: 7 g. Fedt: 15 g. Salt: 0,8 g.**Produceret i:** Mexico.

B

19⁹⁵

250 g

Ingredienser: Vand, løg, tomat, solsikkeolie, paprika, modificeret stivelse (tapioka), valleprotein, salt, avocado, sukker, jalapeño, hvidløg, syre (E270, E330), surhedsregulerende middel (E575), aroma (bl.a. avokado, lime), gærestrakt, krydderier, maltodextrin, fortykningsmiddel (E415), antioxidant (E338), emulgeringsmiddel: (E450a, E472), farvestof (E141, E100).**Næringsindhold pr. 100 g:** Energi: 502 kJ / 120 kcal. Protein: 2 g. Kulhydrat: 8. Fedt: 10 g.**Produceret i:** Danmark.

A



22⁰⁰

370 g / 200 g

Ingredienser: 51% grønne oliven [kan indholde rester af olivensten], 34% vand, 10,5% hvidløg, 4% havsalt, surhedsregulerende midler (E 330, E 270).

Næringsindhold pr. 100 g: Energi: 562 kJ / 136 kcal. Fedt: 14 g, heraf mættede fedtsyrer: 0,5 g. Kulhydrat 5 g, heraf sukkerarter: 0 g. Protein: 2,1 g. Salt: 2,8 g.

Produceret i Grækenland for SuperGros A/S.

B



22⁰⁰

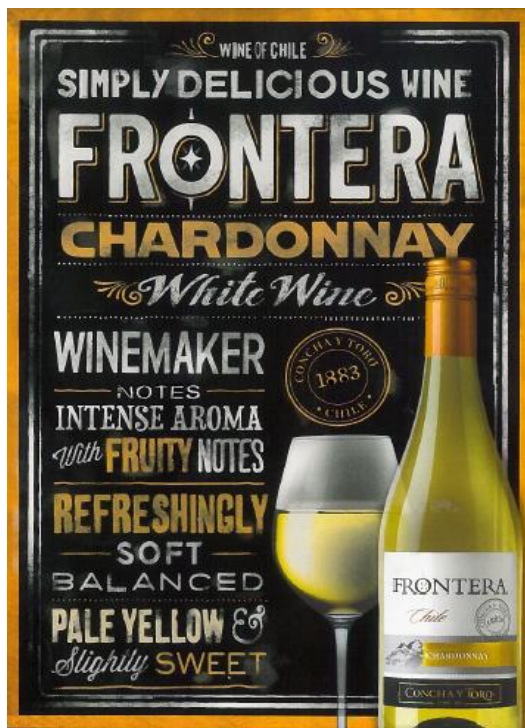
370 g / 200 g

Ingredienser: Grønne oliven 48%, vand, hvidløg 6%, slat, eddike, surhedsregulerende middel (E 270, E 330).

Næringsindhold pr. 100 g: Energi: 548 kJ / 133 kcal. Fedt: 13 g, heraf mættede fedtsyrer: 1,2 g. Kulhydrat 1,5 g, heraf sukkerarter: 0 g. Protein: 1,8 g. Salt: 4,0 g.

Produceret i Grækenland for Irma A/S.

A



111⁰⁰

Producent: Concha y Toro, Valle Central, Chile
3 liter, 13,0 % alc.

B



111⁰⁰

Producent: Santa Carolina, Valle Central, Chile
3 liter, 13,0 % alc.

A

24⁰⁰

250 g

Spansk gul ost af pasteuriseret fåremælk, modnet 6 mdr.

Ingredienser: Mælk, salt mælkesyrekultur, osteløbe, kalciumklorid, lysozyme (protein fra æggehvite). Konserveringsmiddel (E235). Farvestof skorpe (E171).

Næringsindhold pr. 100 g Energi: 1723 kJ / 412,30 kcal. Fedt: 34,30 g, heraf mættede fedtsyrer 24,50 g. Kulhydrat: 1,70 g, heraf sukkerarter 1,50 g. Kostfibre: 0 g. Protein: 24,20 g. Salt: 1,40 g.

Producent: Mancha Real, Spanien.

B

24⁰⁰

250 g

Fast modnet fåremælksost, modnet 6 mdr.

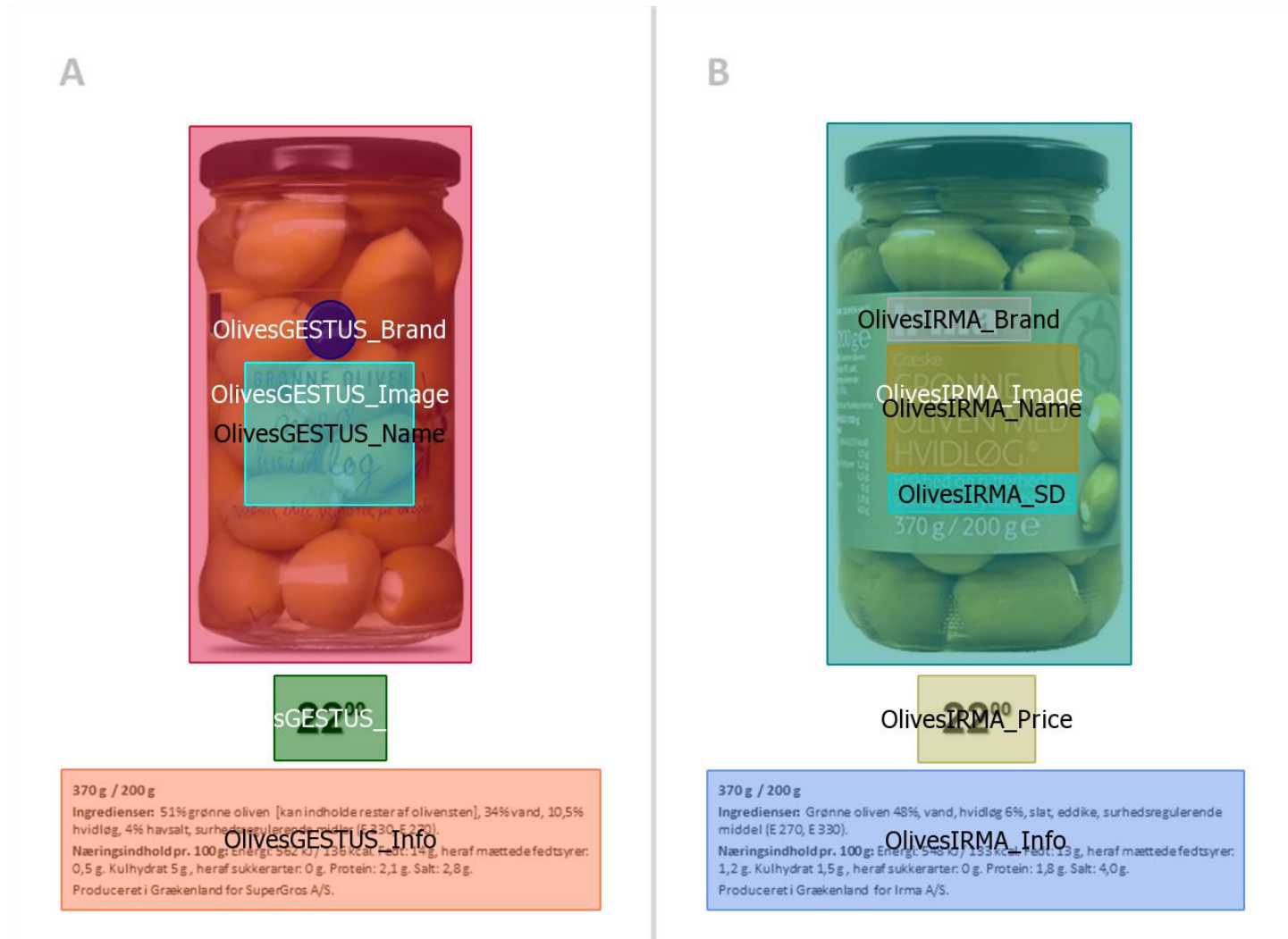
Ingredienser: Pasteuriseret fåremælk, salt, mælkesyrekulturer, osteløbe, calciumklorid, lysozym fra æggehvite. Skorpen er ikke spiselig.

Næringsindhold pr. 100 g Energi: 1955 kJ / 470 kcal. Fedt: 36 g, heraf mættede fedtsyrer 19 g. Kulhydrat: 0-1 g, heraf sukkerarter 0-1 g. Kostfibre: 0 g. Protein: 40 g. Salt: 0 g.

Producent: Villajuncal, Spanien.

Vores smagspanel:
 Dejlig syrlig
 let lagret tydelig ostesmag
 nøddesmag
mildtør
 cremet
 god fast konsistens
 fyldig

Pre-defined areas of interest, AOI (Olives)



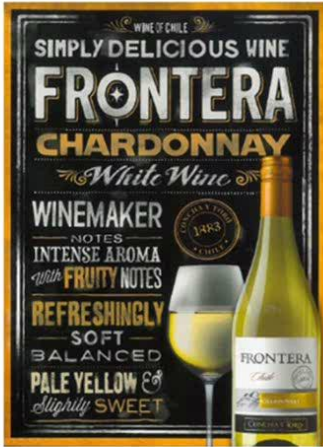
The left-right orientation for each product pair was reversed for two groups of participants

Visual pre-view of eye-tracking results

Bag-in-box white wine:

Two mainstream Chardonnay white wines from Chile competing in a simulated e-store monitored by eye-tracking (move the curser over the image and click on “play” for visualization)

A



111⁰⁰

Producers: Concha y Toro, Valle Central, Chile
3 liter, 13,0 % alc.

A

B



111⁰⁰

Producers: Santa Carolina, Valle Central, Chile
3 liter, 13,0 % alc.

B

*Will the **words** or
the **visual design**,
settle the matter?*

Green olives with garlic:

Two products with profoundly different brand identities competing in a simulated e-store monitored by eye-tracking (move the curser over the image and click on “play” for visualization)



22⁰⁰

370 g / 200 g

Ingredienser: 51% grønne oliven [kan indholde rester af olivensten], 34% vand, 10,5% hvidløg, 4% havsalt, surhedsregulerende midler (E 330, E 270).

Næringsindhold pr. 100 g: Energi: 562 kJ / 136 kcal. Fedt: 14 g, heraf mættede fedtsyrer: 0,5 g. Kulhydrat 5 g, heraf sukkerarter: 0 g. Protein: 2,1 g. Salt: 2,8 g.

Produceret i Grækenland for SuperGros A/S.

A



22⁰⁰

370 g / 200 g

Ingredienser: Grønne oliven 48%, vand, hvidløg 6%, salt, eddike, surhedsregulerende middel (E 270, E 330).

Næringsindhold pr. 100 g: Energi: 548 kJ / 133 kcal. Fedt: 13 g, heraf mættede fedtsyrer: 1,2 g. Kulhydrat 1,5 g, heraf sukkerarter: 0 g. Protein: 1,8 g. Salt: 4,0 g.

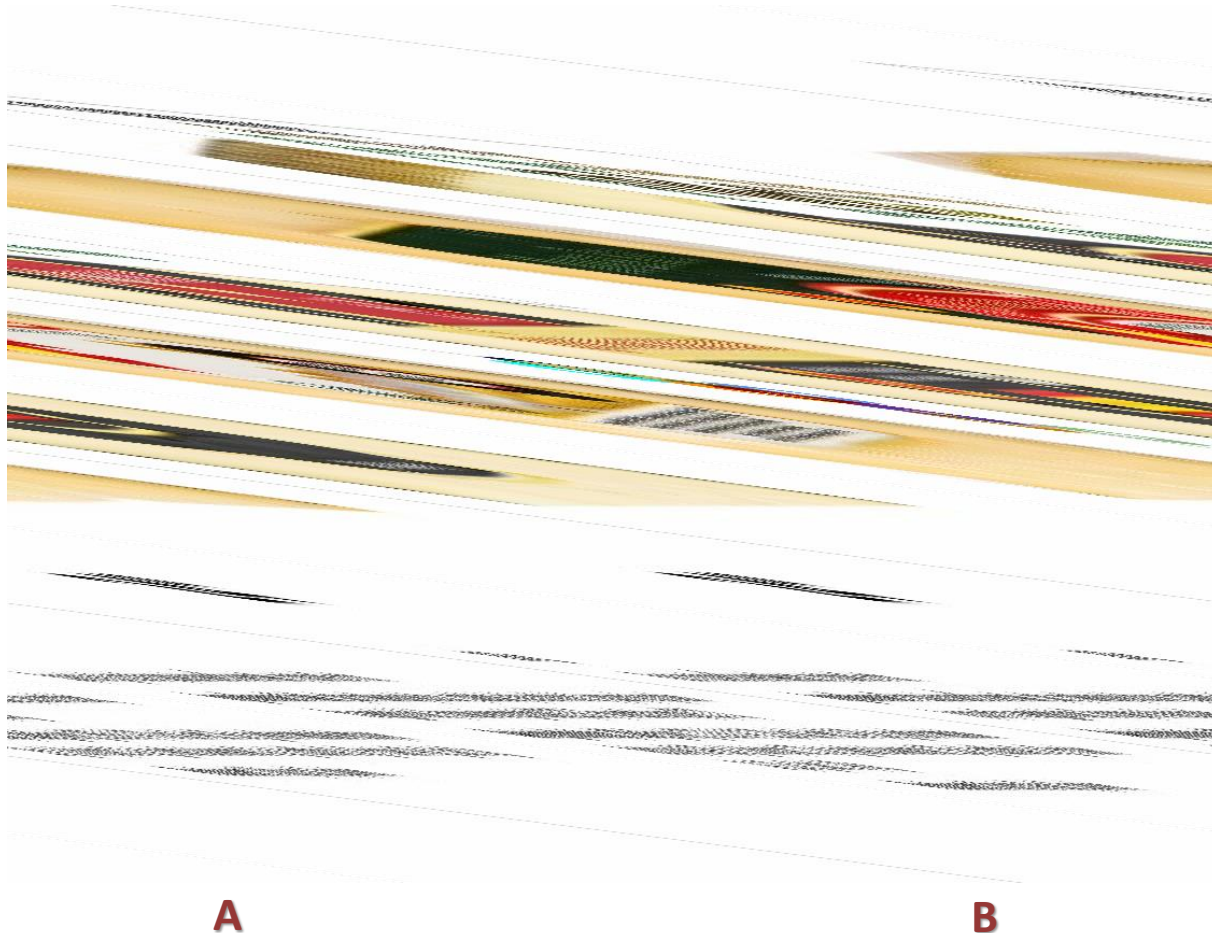
Produceret i Grækenland for Irma A/S.

B

*Will the **words**,
the **visual design**,
or the **brand**
settle the
matter?*

Manchego:

Two products with brand identities not well-known to most Danish consumers competing in a simulated e-store monitored by eye-tracking (move the cursor over the image and click on “play” for visualization)



Will the taste panel's comments or the overall visual appeal settle the matter?

First analysis of key results:

- Products with SD were the most preferred, though more pronouncedly for wine (66%) and cheese (65%) than for olives (56%) (lending marginal support to H1)
- The preference for products with SD was proportional with relative fixation time on SD (lending support to H2)

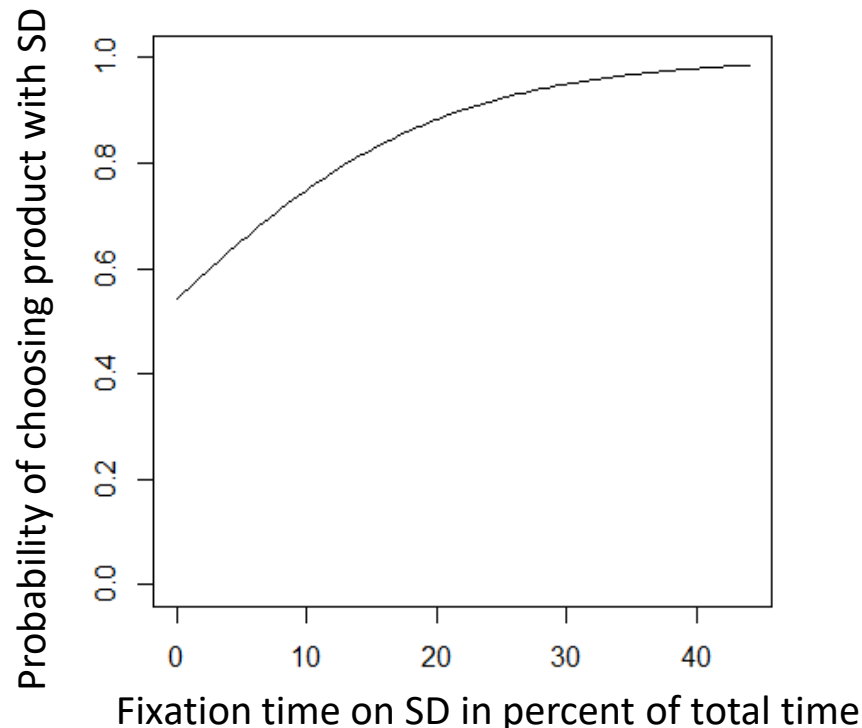


Figure 1: The relation between the probability of choosing the product with the SD and the fixation time on the SD as percent of total time on trial.

The data were analyzed using a logistic linear mixed-effects regression model as implemented in the lme4 (Bates, Mächler, Bolker, & Walker, 2015) and lmerTest (Kuznetsova, Bruun Brockhoff, & Haubo Bojesen Christensen, 2016) libraries; see separate summary by Laura W. Balling on the preliminary data analysis).

More to discover?

Example of consumer who chose A...

A



22⁰⁰

370 g / 200 g

Ingrediensen: 51% grønne oliven [kan indeholde rester af olivensten], 34% vand, 10,5% hvidløg, 4% havsalt, surhedsregulerende midler (E 330, E 270).

Næringsindhold pr. 100 g: Energi: 562 kJ / 136 kcal. Fedt: 14 g, heraf mættede fedtsyrer: 0,5 g. Kulhydrat 5 g, heraf sukkerarter: 0 g. Protein: 2,1 g. Salt: 2,8 g.

Produceret i Grækenland for SuperGros A/S.

B



22⁰⁰

370 g / 200 g

Ingrediensen: Grønne oliven 48%, vand, hvidløg 6%, salt, eddike, surhedsregulerende midler (E 270, E 330).

Næringsindhold pr. 100 g: Energi: 548 kJ / 133 kcal. Fedt: 13 g, heraf mættede fedtsyrer: 1,2 g. Kulhydrat 1,5 g, heraf sukkerarter: 0 g. Protein: 1,8 g. Salt: 4,0 g.

Produceret i Grækenland for Irma A/S.

Example of consumer who chose B...

A



22⁰⁰

370 g / 200 g

Ingrediensen: 51% grønne oliven [kan indeholde rester af olivensten], 34% vand, 10,5% hvidløg, 4% havsalt, surhedsregulerende midler (E 330, E 270).

Næringsindhold pr. 100g: Energi: 562 kJ / 136 kcal. Fedt: 14 g, heraf mættede fedtsyrer: 0,5 g. Kulhydrat 5 g, heraf sukkerarter: 0 g. Protein: 2,1 g. Salt: 2,8 g.

Produceret i Grækenland for SuperGros A/S.

B



22⁰⁰

370 g / 200 g

Ingrediensen: Grønne oliven 48%, vand, hvidløg 6%, salt, eddike, surhedsregulerende midler (E 270, E 330).

Næringsindhold pr. 100g: Energi: 548 kJ / 133 kcal. Fedt: 13 g, heraf mættede fedtsyrer: 1,2 g. Kulhydrat 1,5 g, heraf sukkerarter: 0 g. Protein: 1,8 g. Salt: 4,0 g.

Produceret i Grækenland for Irma A/S.

Here the sensory description was actually **read**!

Example of ANOTHER consumer who chose B...

A



22⁰⁰

370 g / 200 g

Ingrediensen: 51% grønne oliven [kan indholde rester af olivensten], 34% vand, 10,5% hvidløg, 4% havsalt, surhedsregulerende midler (E 330, E 270).

Næringsindhold pr. 100 g: Energi: 562 kJ / 136 kcal. Fedt: 14 g, heraf mættede fedtsyrer: 0,5 g. Kulhydrat 5 g, heraf sukkerarter: 0 g. Protein: 2,1 g. Salt: 2,8 g.

Produceret i Grækenland for SuperGros A/S.

B



22⁰⁰

370 g / 200 g

Ingrediensen: Grønne oliven 48%, vand, hvidløg 6%, salt, eddike, surhedsregulerende midler (E 270, E 330).

Næringsindhold pr. 100 g: Energi: 548 kJ / 133 kcal. Fedt: 13 g, heraf mættede fedtsyrer: 1,2 g. Kulhydrat 1,5 g, heraf sukkerarter: 0 g. Protein: 1,8 g. Salt: 4,0 g.

Produceret i Grækenland for Irma A/S.

*Here the **brand** must have played a decisive part*

...the sensory description was not read at all!

Next steps

- Looking for more possible correlations between key variables
- If needed: Testing additional subjects to enhance statistical power
- Follow-up tests?
- Extracting lessons learned for optimizing real-life design solutions (e.g. Irma's)

For now:

Any comments, ideas, or suggestions?

Thank you!

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