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Temporal Drivers of Liking (TDL)**

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Wine and cheese: alone or in combination? Understanding consumer's preferences thanks to Temporal Drivers of Liking (TDL)

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OBJECTIVES

- ✓ Extending simultaneous-TDL^(a) to wine-cheese pairing
- ✓ Segmenting consumers based on their temporal evolution of liking

MATERIALS & METHODS

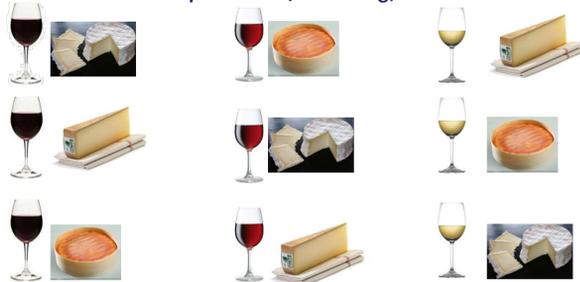
3 wines evaluated in one sip



3 cheeses evaluated in one bite



9 wine-cheese pairs evaluated on the full portion (5cl+ 30g)



Evaluated by 60 wine and cheese consumers



By Temporal Dominance of Sensations (TDS) coupled with dynamic hedonic rating

- ✓ The same data acquisition screen for wine, cheese and the whole portion.
- ✓ 14 descriptors which could be related to either or both products and a "no dominance" button.
- ✓ Free number of liking scores by subject given at different moments of the tasting.

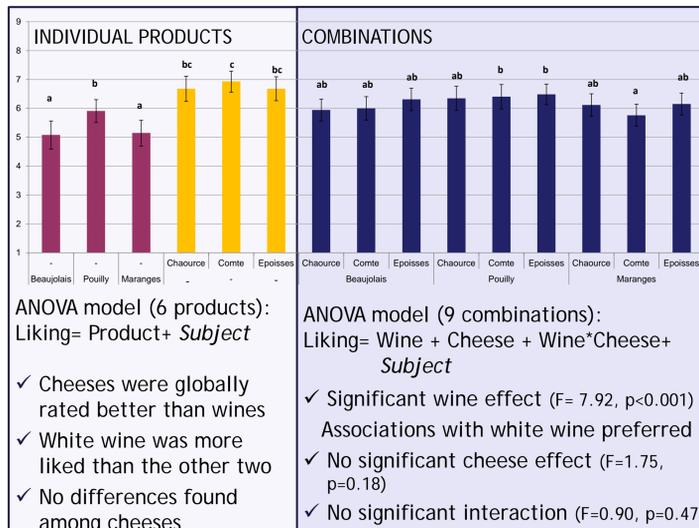
Data analysis

For each product and each combination:

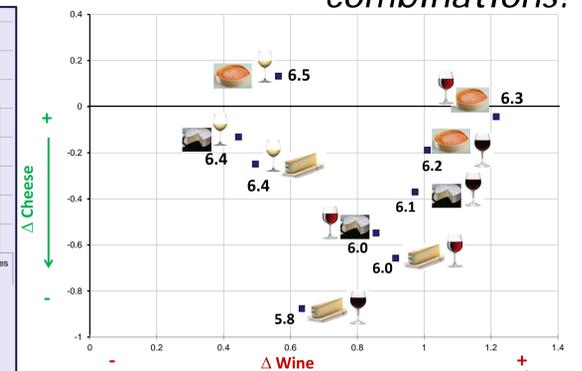
- ✓ ANOVA of mean liking scores weighted by duration
- ✓ Calculation of TDL^(a)
- ✓ Calculation of the Individual Correlations (IC) of liking and time by product
- ✓ Cluster analysis of consumers based on IC

RESULTS

Mean liking scores, weighted by time



Was liking improved in combinations?



- ✓ Wine liking < Combination liking < Cheese liking
- ✓ White wine better than red in combination with cheese!
- ✓ Whereas Comté was the most liked cheese, Epoisses offers better combinations!

Temporal Drivers of Liking

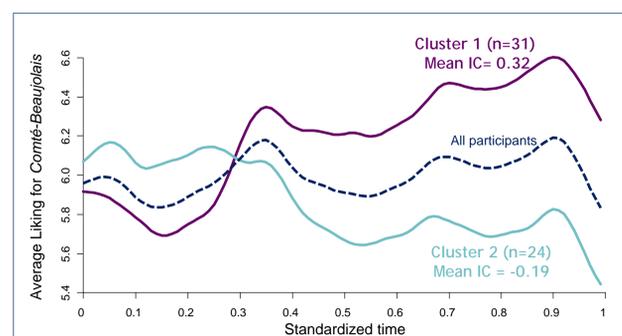
	Positive TDL	Negative TDL
Individual products		
Maranges (Ma)	Fruity	Sour; Bitter
Beaujolais (Be)	Woody	Astringent; Sour; Bitter
Pouilly L. (Po)	Fruity; Spicy	Sour
Chaource (Ch)	-	-
Comté (Co)	Mushroom	-
Epoisses (Ep)	-	Salty
Combinations		
Ch-Ma	Lactic; Toast; Sweet	Sour; Bitter
Ch-Be	Lactic; Toast; Fruity	Astringent; Sour; Bitter
Ch-Po	-	Sour
Co-Ma	Fruity; Salty	Astringent; Sour; Bitter
Co-Be	Fruity	Sour; Bitter
Co-Po	Mushroom	Astringent; Bitter
Ep-Ma	Lactic; Sticky; Salty; Nothing dominates	Astringent; Sour; Bitter
Ep-Be	Lactic; Sweet; Animal	Astringent; Sour
Ep-Po	Fatty; Mushroom; Sweet	-

Significance level: 10%

- ✓ Negative TDL mostly present in red wines.
- ✓ The negative TDL of wines were still present in the combinations.
- ✓ Salty was a negative TDL in Epoisses, but a positive TDL with the most tannic wine associated with Epoisses and Comté.
- ✓ Astringent was a negative TDL in Maranges only in association with Comté and Epoisses.
- ✓ Fruity became a positive TDL in Beaujolais when Chaource or Comté were associated with this wine.
- ✓ Mushroom drove positively liking in the two most liked combinations.
- ✓ No negative TDL when Epoisses was associated with white wine!

Consumer segmentation based on IC

- ✓ The best configuration resulted in 2 clusters.
- ✓ Biggest difference among clusters was found for Comté-Beaujolais.



For five subjects, no IC difference was observed between combinations

TDL for Comté-Beaujolais by cluster

	Positive TDL	Negative TDL
Cluster 1	Fruity	Sour
Cluster 2	Fruity; Fatty; Lactic	Bitter

Significance level: 10%

- ✓ Whereas liking was almost constant in average over participants, it increased significantly in Cluster 1 and decreased in Cluster 2.
- ✓ Fruity was a common positive TDL in both clusters.
- ✓ Bitter was a strong negative TDL for Cluster 2: liking decreased in 0.68 in average when it was dominant.

CONCLUSIONS

- ✓ Negative TDL were only present in red wines: bitter, sour and astringent.
- ✓ Positive TDL were: fruity, spicy and woody.
- ✓ Associations:
 - ✓ Negative TDL were only three and mostly wine related: sour (for 7/9 combinations), bitter (6/9) and astringent (5/9).
 - ✓ Positive TDL were varied (10); related either to wine or cheese.
- ✓ Individual Correlations: a new way of analysing dynamic liking scores taking into account changes in liking all along time.
- ✓ Big potential of TDL in the study of food pairing which should be further exploited.

References

^(a) Thomas, A., Chambault, M., Dreyfuss, L., Gilbert, C. C., Hegyi, A., Henneberg, S., et al. (2017). Measuring temporal liking simultaneously to Temporal Dominance of Sensations in several intakes. An application to Gouda cheeses in 6 European countries. Food Research International. <https://doi.org/10.1016/j.foodres.2017.05.035>