

## Context

Matching food and beverage is rooted in cultural practices and all food and beverage pairings are not equivalently appropriate (Cornwell and McAlister, 2013). When several dishes are tested with several drinks, the best match is not systematically the one associating the preferred dish and the preferred beverage. Actually, food and drink pairing involves a lot of other aspects requiring culinary experts' or sommeliers' expertise. **Aromatic similarity** is often mentioned by experts as basic principle to match food and drink. It consists in pairing two products sharing one or several aromas. For example a pale ale beer having vanilla note would be a good partner for fruit salad and

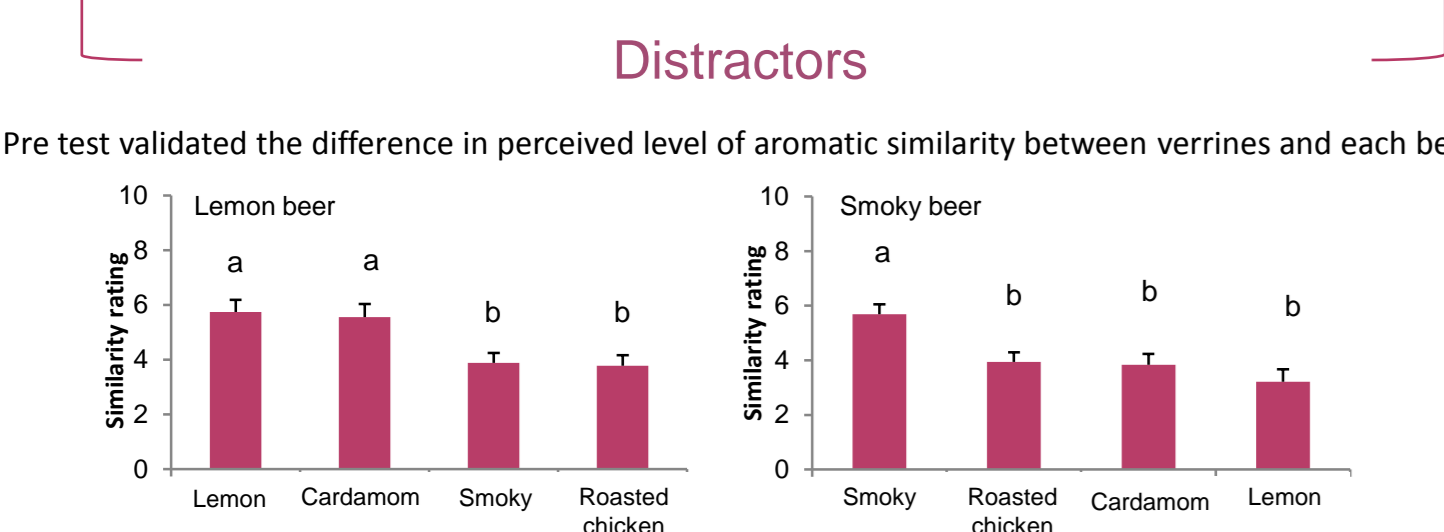
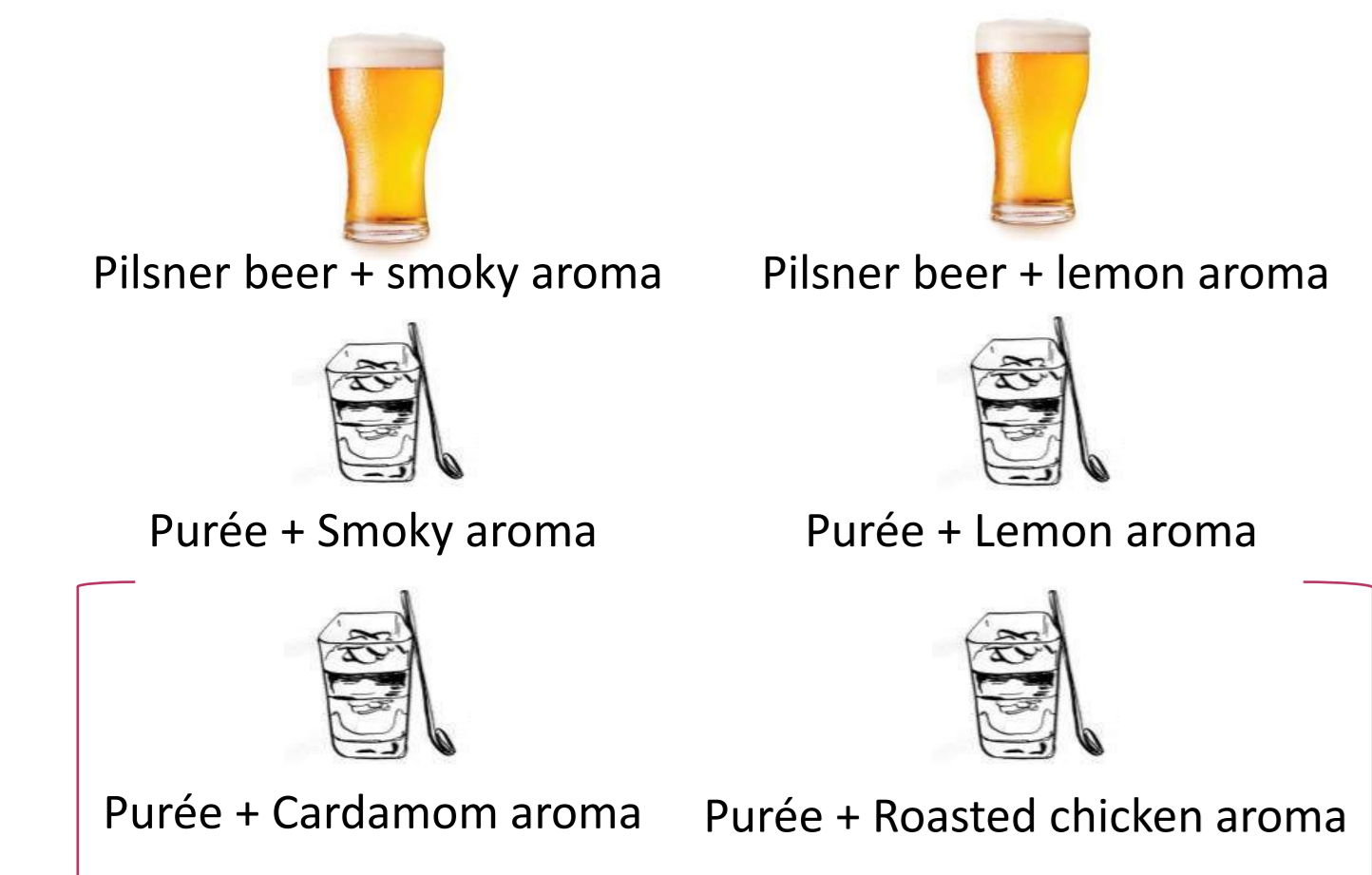
vanilla ice cream. Similarities between two products is expected to increase harmony (Schloss et al., 2011) and decrease complexity (Berlyne et al., 1971) of the pairing and lead to a liked association.

The aim of this study was first, to investigate how the aromatic similarity between food and beverage affects consumers' judgment of pairings (study 1) and how information on aromatic characteristics of the products modulates the effect of aromatic similarity on this judgment (study 2).

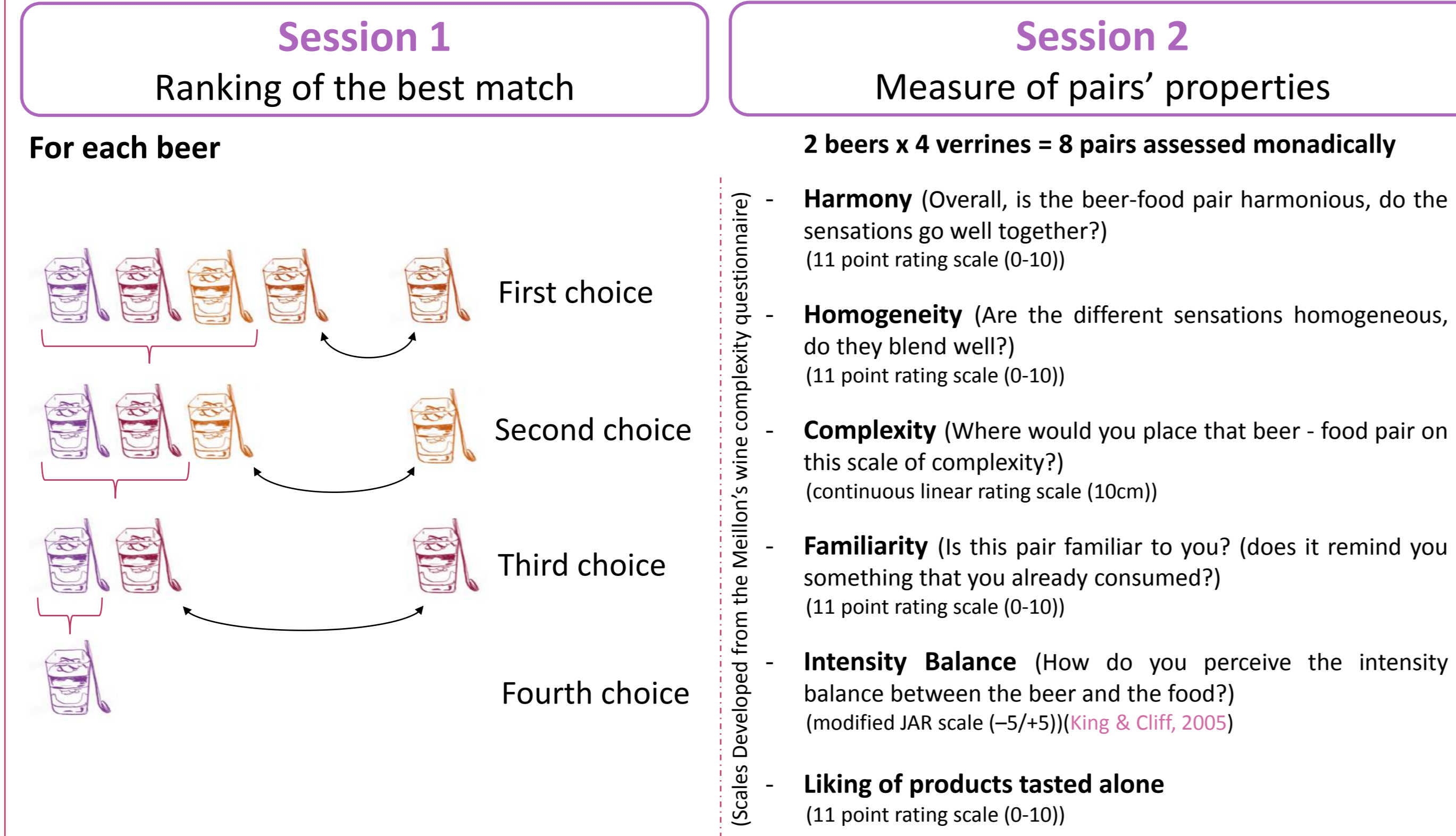
## Method

### STUDY 1

**Products**  
 Flavored beers and « Verrines » were prepared to create pairs with or without aromatic similarity



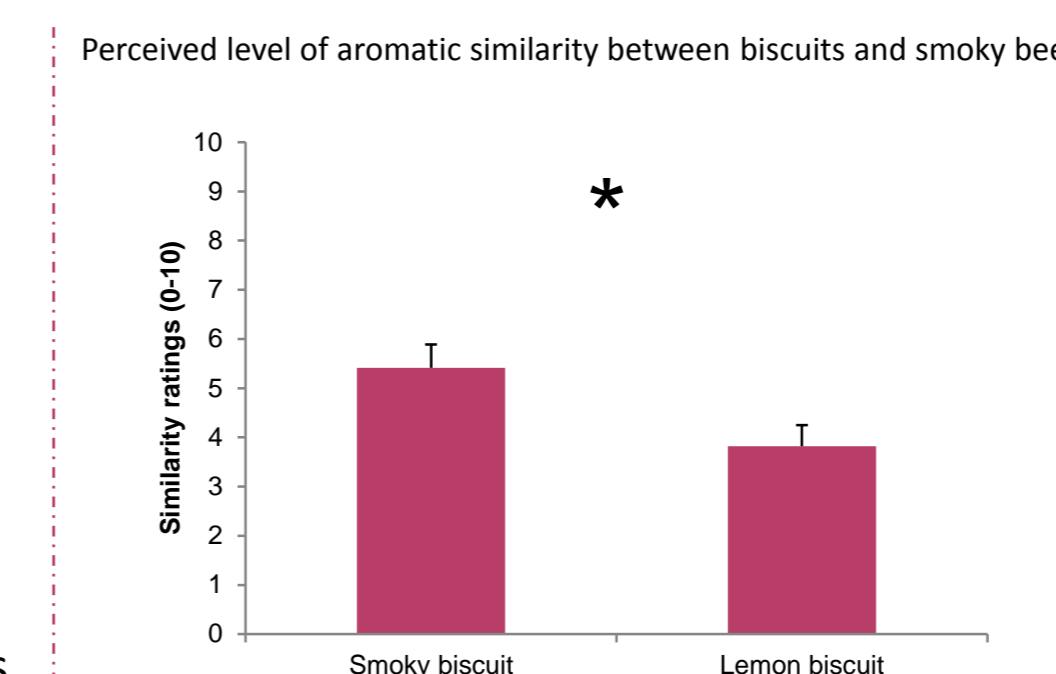
**Procedure**



N=47

### STUDY 2

**Products**



**Procedure**

**Experimental design**

	Aromatic similarity	No aromatic similarity
Without information	Smoky beer/Smoky biscuit (N=29)	Smoky beer/Lemon biscuit (N=48)
With information	Smoky beer/Smoky biscuit + Information about aromas (N=30)	Smoky beer/Smoky biscuit + Information about aromas (N=41)

Experimental conditions Between participants design

**Study location**



N=148

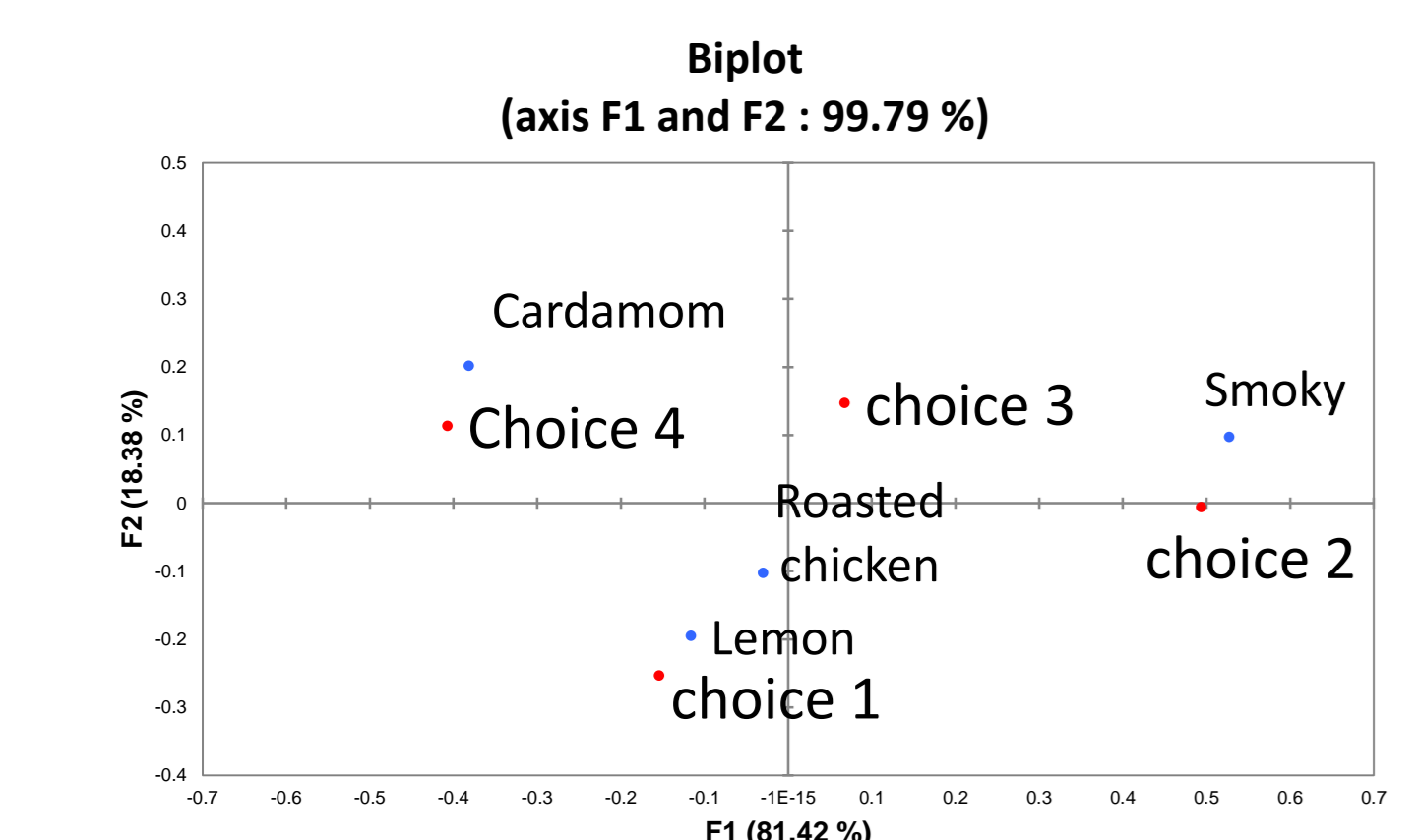
**Rated variables**

- Harmony** (Overall, is the beer-food pair harmonious, do the sensations go well together?) (11 point rating scale (0-10))
- Complexity** (Where would you place that beer - food pair on this scale of complexity?) (continuous linear rating scale (10cm))
- Intensity Balance** (How do you perceive the intensity balance between the beer and the food?) (modified JAR scale (-5/+5))(King & Cliff, 2005)
- Liking of products tasted alone** (11 point rating scale (0-10))

## Results

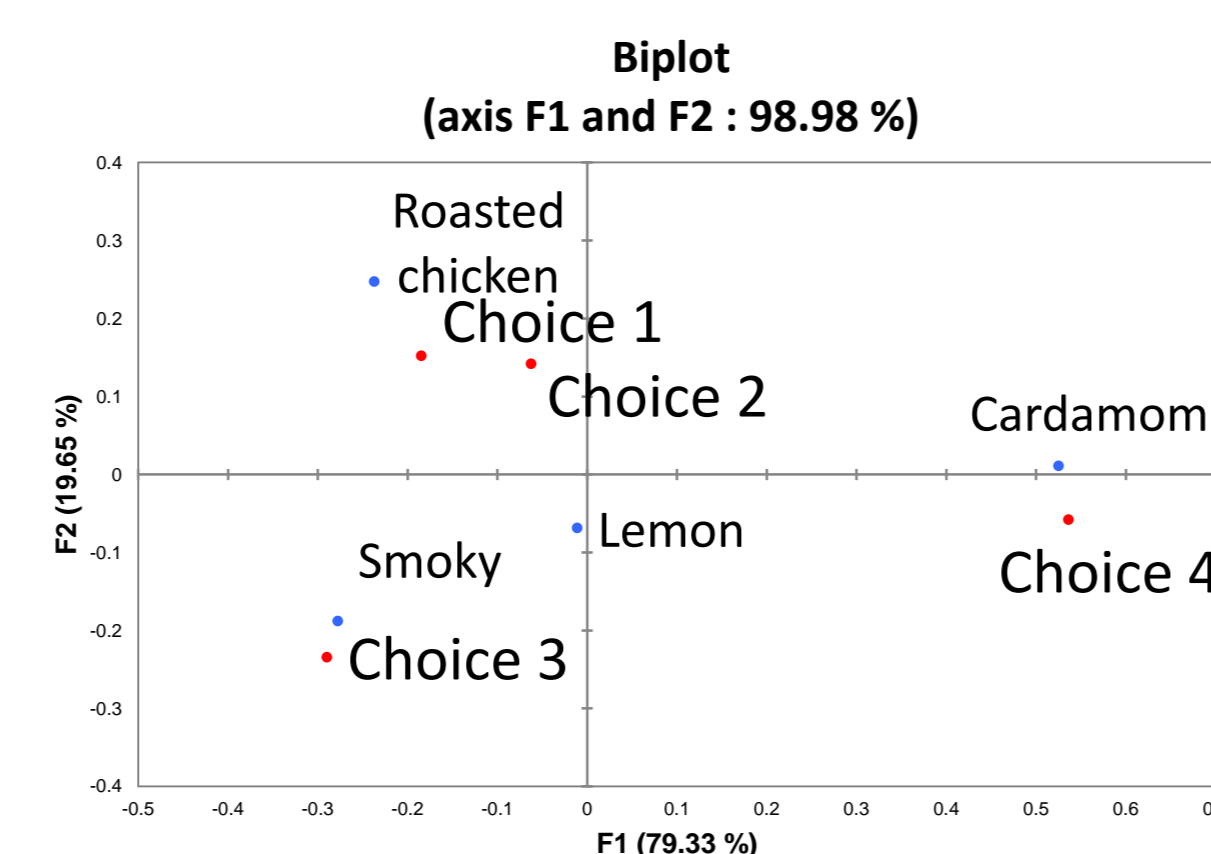
### STUDY 1

**Ranking of the best match**



Rank of choice	Liking of verrine
Choice 1	6,6 a
Choice 2	5,8 ab
Choice 3	5,2 b
Choice 4	3,3 c

P-value <0.0001

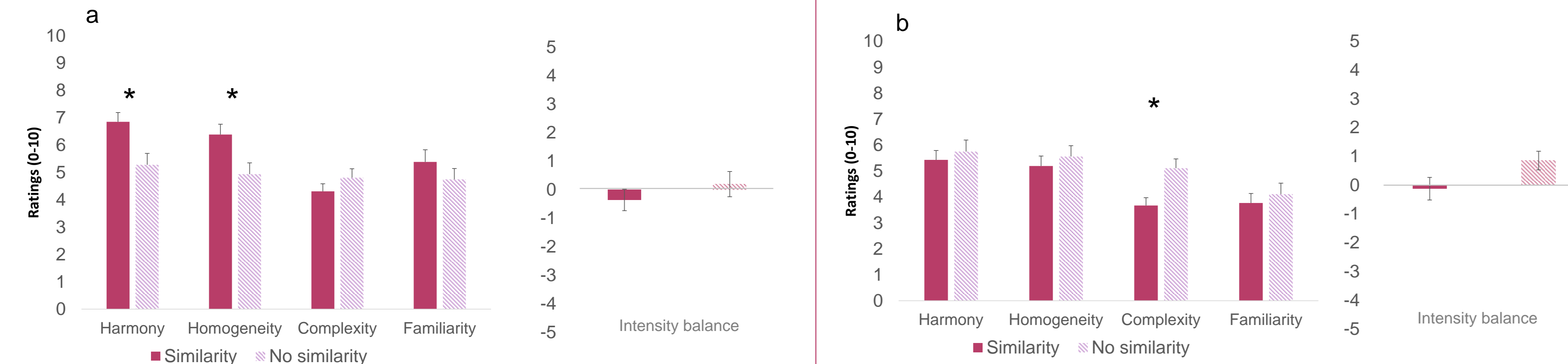


Rank of choice	Liking of verrine
Choice 1	6,6 a
Choice 2	5,7 ab
Choice 3	5,3 b
Choice 4	3,3 c

P-value <0.0001

Lemon verrine is preferentially chosen to be matched with lemon beer; however, smoky verrine is not preferentially chosen with smoky beer. Independently of the verrine type, the liking of the individual food seems to modulate the pairing choices.

**Pairs properties**



Aromatic similarity increases the level of perceived harmony and homogeneity with lemon beer (a) and decreases the level of perceived complexity with smoky beer (b). For each beer the two pairs are equivalent in terms of familiarity and intensity balance.

Harmony and homogeneity strongly correlated (r=0,82) => Harmony

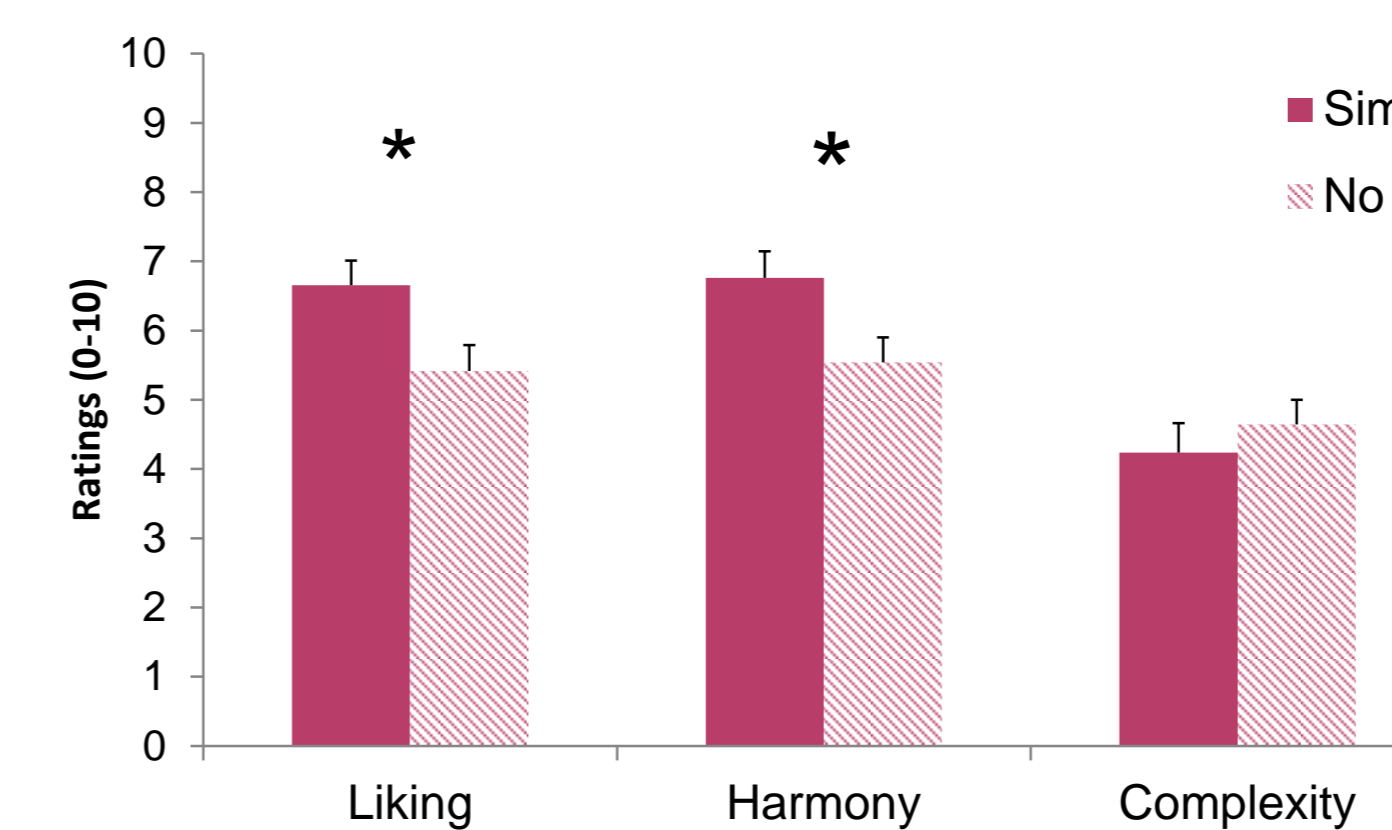
Overall, the two verrines were equally liked; the lemon beer was preferred over the smoky beer (p=0,043)

## Conclusion

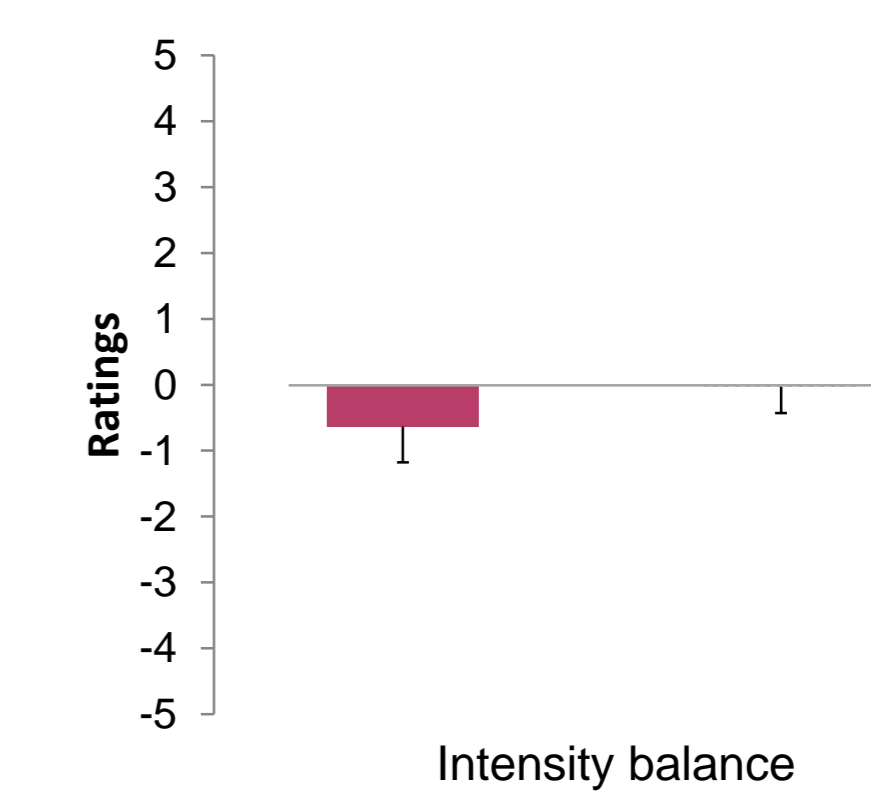
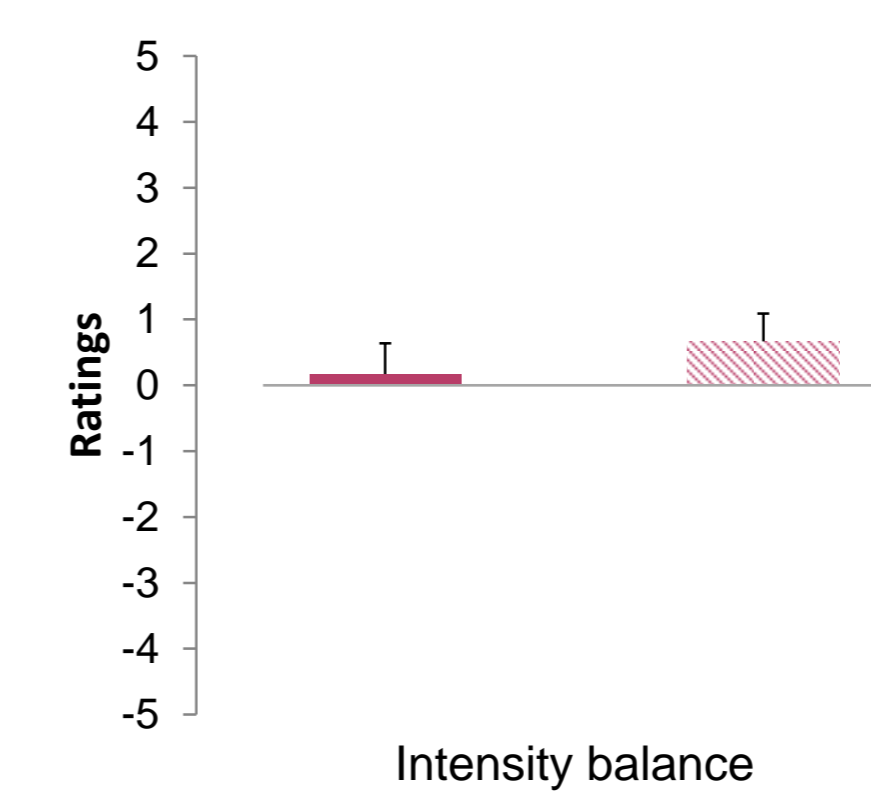
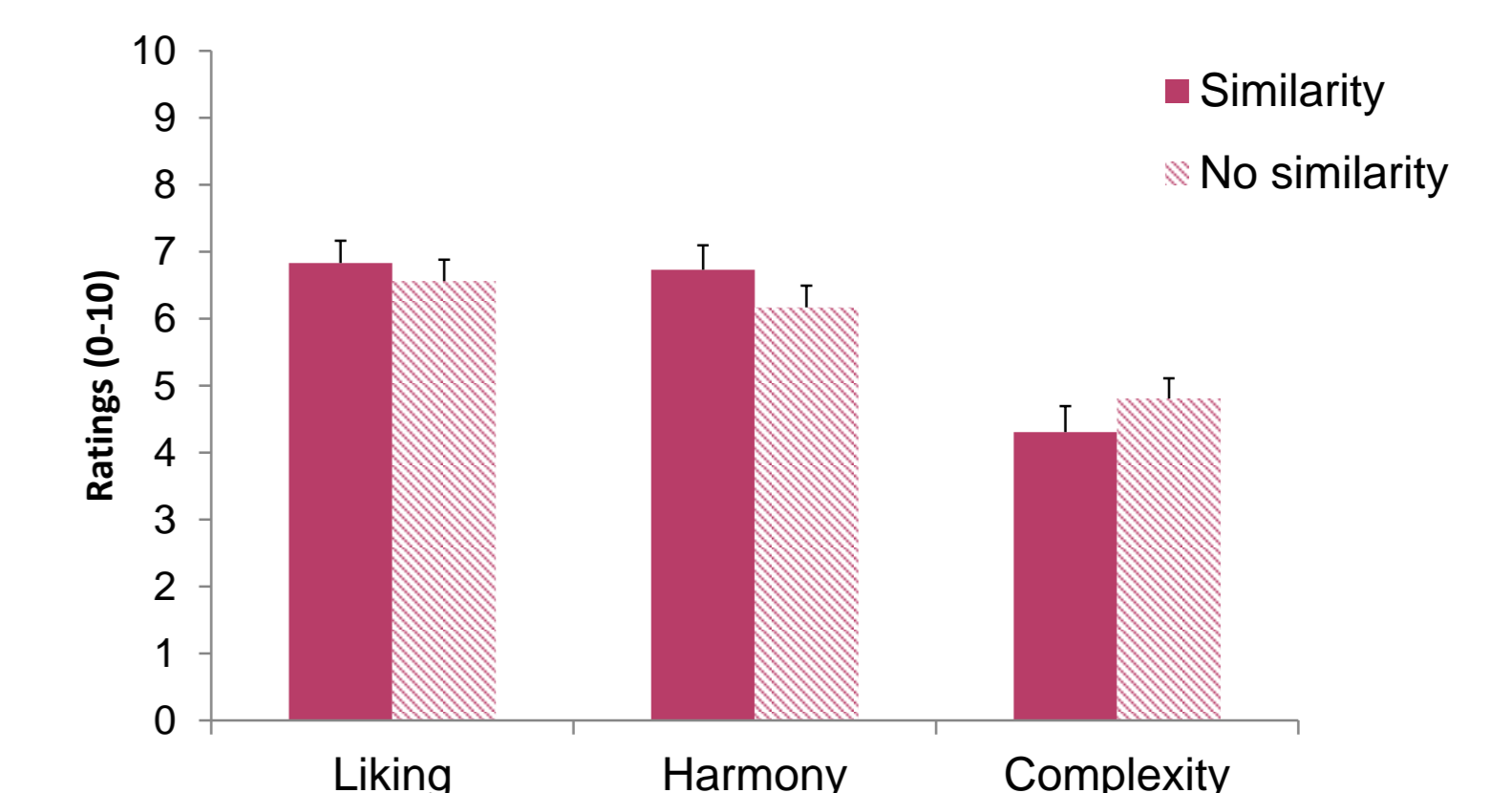
- Aromatic similarity impacts liking of the pair through harmony and complexity
- Information on beer and biscuit aroma when similar does not impact pairing perception; it probably does not increase perceived similarity
- Liking of products tasted alone impacts liking of the pair, aromatic similarity matters whenever liking of alternatives are equivalent

### STUDY 2

Without information



With information



When tasted without information, the pair with aromatic similarity is more liked and perceived as more harmonious than the pair without aromatic similarity but is not perceived as less complex.

When tasted with information, the pairs are not perceived differently harmonious and complex and are not differently liked. The two pairs are equivalent in terms of intensity balance whether the information is given or not.

Information increases the liking of the pair without aromatic similarity (p=0,025)

## References

- Berlyne, D. E., & Boudewijns, W. J. (1971). Hedonic effects of uniformity in variety. *Canadian Journal of Psychology/Revue canadienne de psychologie*, 25(3), 195-206
- Cornwell, T. B., & McAlister, A. R. (2013). Contingent choice. Exploring the relationship between sweetened beverages and vegetable consumption. *Appetite*, 62, 203-208.
- King, M., & Cliff, M. (2005). Evaluation of ideal wine and cheese pairs using a deviation-from-ideal scale with food and wine experts. *Journal of Food Quality*, 28(3), 245-256.
- Meillon, S., Viala, D., Medel, M., Urbano, C., Guillot, G., & Schlich, P. (2010). Impact of partial alcohol reduction in Syrah wine on perceived complexity and temporality of sensations and link with preference. *Food Quality and Preference*, 21(7), 732-740
- Schloss, K. B., & Palmer, S. E. (2011). Aesthetic response to color combinations: preference, harmony, and similarity. *Attention, Perception, & Psychophysics*, 73(2), 551-571.