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**Stimulus collative properties in food products and their importance for consumer liking:
A case study with novel beers**
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Introduction

There is a dilemma between liking for familiar stimuli and a wish to experiment with new ones. Berlyne's theory on aesthetic preference[1], predicts that to maximize sensory appreciation, a (food) product should aim at optimizing the balance between familiarity and novelty.

Methods

Eight beers were tested by a consumer panel (N=135), for which relevant consumer characteristics – namely product knowledge, food neophobia and variety seeking tendency – were known. Consumers evaluated liking and three collative properties: novelty, familiarity and complexity.

Results

A multiple linear regression model was carried out to analyze effects of the three collative properties on liking (Adj. R^2 = .4, $F_{(3, 1076)}$ = 239.66, p < .001). All properties significantly positively predicted liking, with complexity (b = .47, $t_{(1076)}$ = 14.67, p < .001) and familiarity (b = .39, $t_{(1076)=}$ 15.06, p < .001) being the strongest regressors, followed by novelty (b = .27, $t_{(1076)}$ = 8.23, p < .001). Non-linear relationships were assessed by computing smoothing points using locally weighted polynomial regression[2]. Berlyne's predicted trajectory (inverse U-shaped) described most accurately the relationship between novelty and liking (Figure 1a), whereas the relationships between liking and the two other collative properties is linear and monotonic (Figure 1b+c).

ANOVA was performed using consumer traits as main effects. High variety seeking consumers gave significantly higher overall liking (p = .008). Consumers with higher product knowledge rated the beers significantly more familiar (p = .02), less novel (p = .03) and less complex (p < .001). No significant effects of degree of neophobia were observed.

Conclusion

Taken overall, our results confirm that liking is indeed a result from a combination of novelty, familiarity and complexity. Furthermore, we expand prior work on collative properties in a food context, by showing that several different consumer variables need to be taken into consideration for predicting consumer liking.

References:

[1] Berlyne, D. E. (1970). Novelty, complexity and hedonic value. *Perception and Psychophisics, 8*, 279-286.

[2] Cleveland, W. S. (1979). Robust Locally Weighted Regression and Smoothing Scatterplots. *Journal of the American Statistical Association, 74*, 829-836.
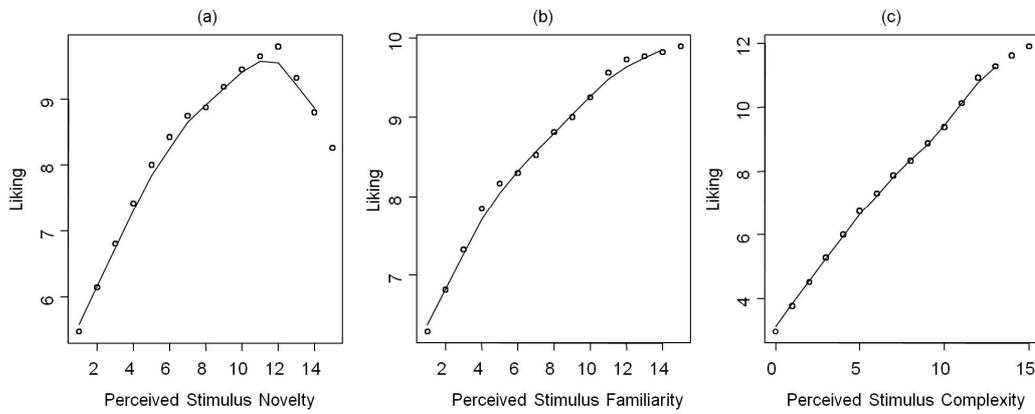

Fig. 1 – Robust smoothed values of novelty (a), familiarity (b) and complexity (c) against liking.