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Social modeling of low and high energy density starters and desserts

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Context et Objective

- **Social Modeling** consists in using others' behavior as a guide for appropriate consumption.
- The majority of studies on social modeling were interested in food intakes.
- **Much less is known** about social modeling of **food choices**, when exposed to a various range of foods, including both **high and low energy density items**.
- A previous study conducted in real-conditions observed social modeling of food choices for starters but not for desserts, suggesting that all food categories are not similarly susceptible to social modeling (Garcia *et al*, 2021).

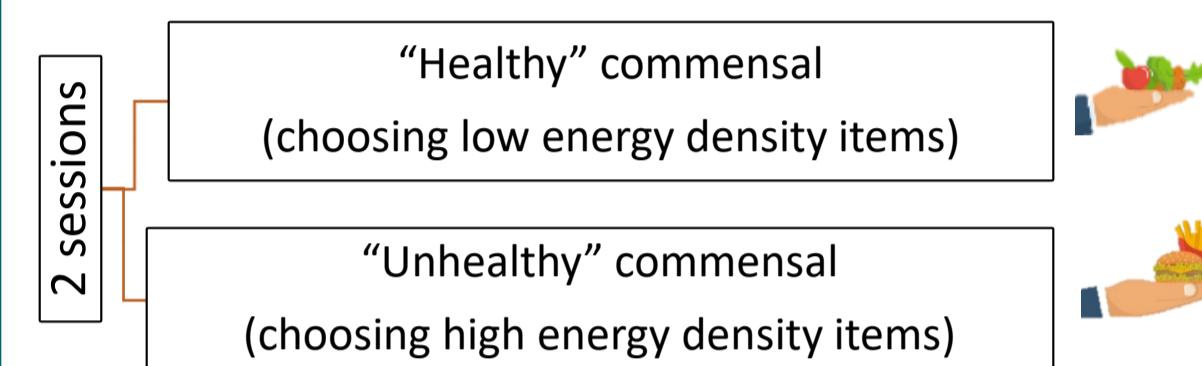
The aim of this study is to characterize social modeling of food choice for different food categories (starters and desserts) and of both high and low energy density.



Methods

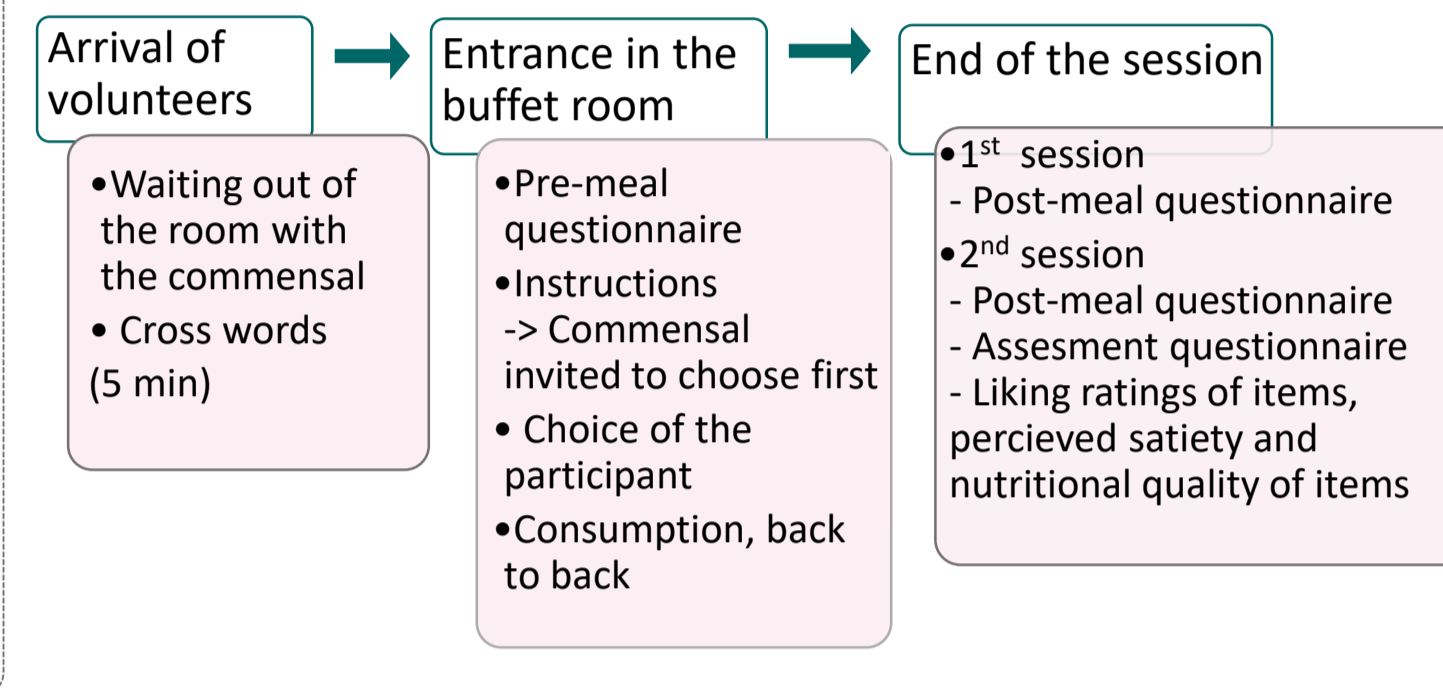
Protocol

40 volunteers (Women, 18-65 years, normal BMI (18,5 et 25 kg/m²), no specific diet, no eating disorders)



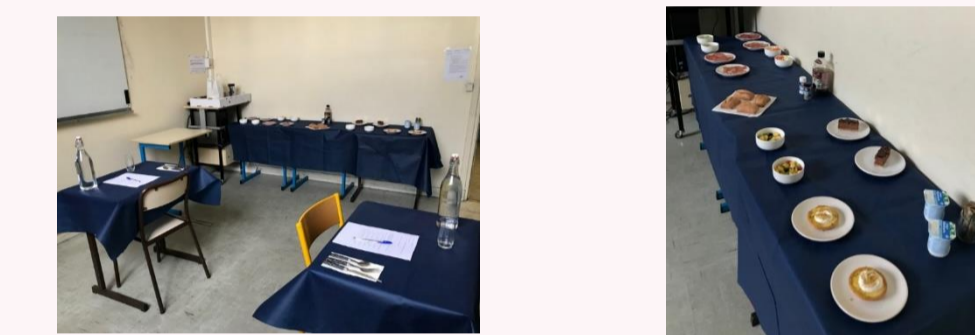
Commensal = Women with normal BMI
→ Same commensal for both conditions

	Starters	Plat	Desserts
HEALTHY	Tomatoes cucumber 75 g - 22 kcal Carrots Celery 75 g 60,6 kcal	Lasagna 190 g 228 kcal	Fruits salad 100g 56,1 kcal Plain Yogurt 125g 53,75 kcal
UNHEALTHY	Sausage 30 g - 115 kcal Ham/Coppa 30 g 80 kcal	Lasagna 190 g 228 kcal	Chocolate cake 60g - 240 kcal Lemon Pie 70g 306,4 kcal



Statistical Analysis

- Food choices distribution between "healthy" and "unhealthy" items according to the condition and the session :
→ **McNemar tests**
- Energy intake according to the condition and the session
→ **T-tests**



Results

Population

N=39
1 woman excluded because she guessed the aim of the study
Mean age: 37 years (+/- 10.7)
Mean BMI: 21.86 kg/m² (+/- 2.05)

Energy Intakes

Comparison (T-test) of total, starters and desserts energy intake between conditions and sessions

	Between Conditions	Between Sessions
Total Energy Intake	p = 0.85	p < 0.01
Starters Energy Intake	p = 0.20	p = 0.26
Desserts Energy Intake	p = 0.82	p = 0.01

- No significant difference in energy intake between « Healthy » and « Unhealthy » conditions.
- Significantly higher consumption of energy intake during session 1 compared to session 2
- Energy intake difference between the sessions was due to a higher consumption of high energy density desserts in session 1

Food Choice Distribution

Starters

→ Between Conditions

Condition	Healthy Condition		
	Choice	Healthy	Unhealthy
Unhealthy	Healthy	27	4
Condition	Unhealthy	4	4

McNemar chi-2 = 0; p-value= 1

→ Between Sessions

McNemar chi-2 = 0.5; p-value= 0.48

Desserts

→ Between Conditions

Condition	Healthy Condition		
	Choice	Healthy	Unhealthy
Unhealthy	Healthy	12	9
Condition	Unhealthy	6	12

McNemar chi-2 = 0.6; p-value = .44

→ Between Sessions

McNemar chi-2 = 2.58; p-value= 0.11

- No significant difference in the distribution of choices between low and high energy density items according to the condition or the session, neither for desserts nor for starters.

→ **No social modeling observed.**

Other factors explaining food choices

	Carrots Celery	Tomatoes Cucumbre	Ham Coppa	Sausages	Yogurt	Fruits salad	Chocolate cake	Lemon Pie
Liking ratings	p < 0,01	p = 0,01	p < 0,01	p = 0,04	p = 0,66	p = 0,052	p = 0,01	p < 0,01
Expected satiety	p = 0,67	p = 0,74	p = 0,01	p = 0,39	p = 0,12	p = 0,30	p = 0,86	p = 0,40
Perceived Nutritional Quality	p = 0,06	p = 0,08	p = 0,02	p = 0,43	p = 0,26	p = 0,97	p = 0,86	p = 0,09

→ Liking is the main factor predicting food choices

Conclusion / Discussion

- We did not observe social modeling of low and high energy density choices.
- Choices may be less susceptible to external influences compared to quantities because people may feel more certain of their food preferences than the adequate quantities to consumed, and thus do not look for guidance in their choices.
- Low appreciation of high energy density items + Low number of items: reduced the uncertainty regarding preferences, and thus the susceptibility to external influences.
- Biases linked to the study setup? (ex. layout: participant and commensal ate back to back)
- Liking appeared as the main determinant of participants' food choices in the experiment.
- Energy intake was higher in session 1 compared to session 2, due to a higher consumption of high energy density desserts in session 1, which could be due to the novelty effect of the buffet.

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