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## Processing of odour mixture complexity in newborn rabbits

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# Post-ingestive conditioning on consumers' expectation : a case study on fibre-enriched bread

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## INTRODUCTION

The association between a food and a high caloric content increases liking and/or intake of that food relative to a food associated with a low caloric content<sup>1</sup> (flavour-nutrient conditioning). Acquired changes in evaluation and intake are usually assessed by asking subjects to taste and rate their liking for the conditioned food, and/or to consume this food *ad libitum*. The aim of the present experiment was to assess whether two breads inducing different post-ingestive consequences (evidenced in a pre-study) also changes further subjects' expectation for this food, before tasting it.

**WB**  
White bread  
(2.3% fibres)



**FB**  
Fibres-enriched bread  
(12.8% fibres)



## METHOD

### Participants

Age: 31 ± 1 years - Gender: 39 ♀ 24 ♂

Restriction score (Three Factors Eating Questionnaire): 6.5 ± 0.4

### Groups

Experimental-group (n=31): 2 exposure sessions + 1 test session

Control-group (n=32): 1 test session

### Exposure sessions (experimental)

On each session, subjects were exposed to one bread. They were served a quantity corresponding to their usual bread intake at breakfast. Half of the subjects were served the WB at the first session and the FB at the second session; the other half of the subjects proceeded in the reverse way.

### Test session (experimental + control)

**Implicit :** "Serve as many slices of each bread as you would like to eat at your breakfast."

**Explicit :** "How much do you think you will like this bread?"

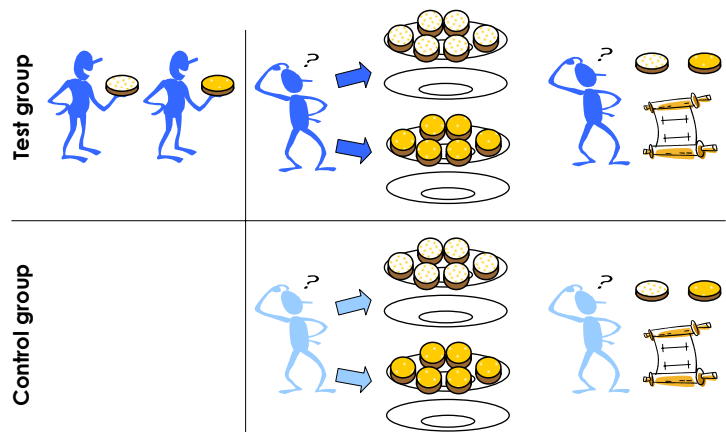
How much do you think this bread will be satiating?"

### Exposure sessions

### Test session

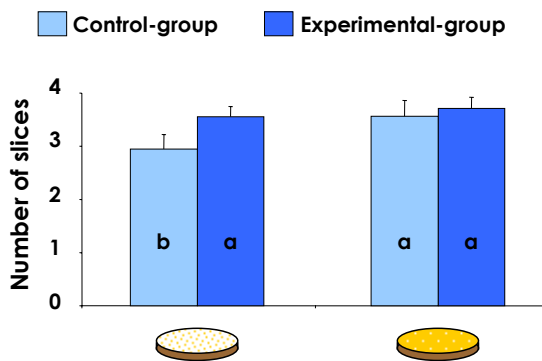
#### Implicit task

#### Explicit task



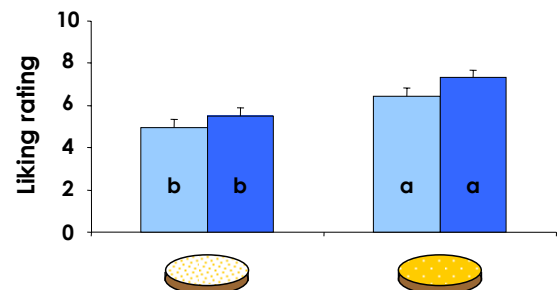
## RESULTS

### Implicit task results



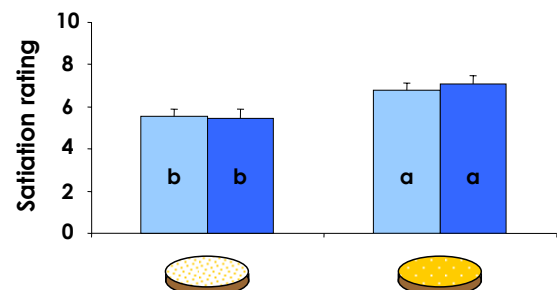
A significant bread × group interaction was observed ( $F_{\text{bread} \times \text{group}} = 4.95$ ;  $p < .05$ ). In the control-group, participants picked up less slices of the white bread than of the fibre-enriched bread. However, exposure led participants of the experimental-group to pick up more slices of the white bread than the control-group. Moreover, exposure led the participants of the experimental-group to pick up as many slices for the white bread as for the fibre-enriched bread.

### Explicit task results



In both groups, the fibre-enriched bread was preferred to the white bread ( $F_{\text{bread}} = 23.75$ ;  $p < .001$ ).

Exposure led to higher liking for both breads ( $F_{\text{group}} = 4.37$ ;  $p < .05$ ). No significant bread × group interaction was observed ( $F_{\text{bread} \times \text{group}} = .27$ ;  $p = .60$ ).



In both groups, the fibre-enriched bread was judged more satiating than the white bread ( $F_{\text{bread}} = 12.24$ ;  $p < .01$ ).

However, exposure did not change satiation rating ( $F_{\text{group}} = 0.08$ ;  $p = .78$ ) whatever the bread as there was no significant interaction ( $F_{\text{bread} \times \text{group}} = 0.27$ ;  $p = .65$ ).

## CONCLUSION

Before exposure, participants expected that the bread FB would be more satiating than the bread WB. However, after exposure, an effect of exposure was observed in the implicit task for the low satiating bread (white bread) but not for the high satiating bread (fibre enriched bread): participant of the experimental-group picked up more slices of the white bread than participants of the control-group. This increase could hardly be explained by liking ratings because exposure led to an increase of liking for both bread but WB remained less appreciated than FB. It seems that the association with post-ingestive effect is more efficient for increasing the consumption of a low satiating bread than for decreasing the consumption of a high satiating bread.