



Food perception and emotion measured over time in-lab and in-home

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Background

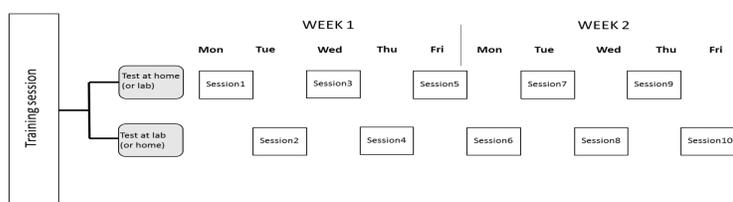
The context in which consumers eat their foods influences the acceptance of the consumed foods. Consequently, consumers' hedonic and sensory ratings elicited in a natural consumption context will differ from those elicited under controlled sensory laboratory conditions. Moreover, foods are rarely consumed on one single occasion but are typically consumed repeatedly and ratings may change over repeated consumptions as well. Often, consumer acceptance is tested explicitly, for example with liking ratings, especially when the testing is done outside the laboratory. Implicit tests such as facial expressions and physiological measurements of the autonomic nervous system can provide additional information on consumer acceptance

Objective

To investigate the effect of test location (lab versus home) on the evaluation of commercial foods presented repeatedly using a combination of implicit and explicit tests. Variables such as test procedures and social context were kept constant across locations.

Methods

Eighteen healthy Dutch consumers (18-65 years of age, 11 females, 7 males) tested four test foods plus a warm-up sample ten times on consecutive weekdays and on similar hours using their own laptop and webcam. Test foods were: fried chicken, chicken with soy sauce, fried tofu with soy sauce, and vegetarian chicken. Test locations alternated between the sensory laboratory and the participant's own home (Scheme 1). Explicit measures included liking scores and scores on ten sensory taste/flavour/texture attributes, and implicit measures included facial expressions, heart rate (both using Face Reader™) and consumption duration.



Scheme 1: Schedule of testing. Each participant participated in ten test sessions alternating between home and lab.

Results

The liking scores and sensory profiles varied between test foods ($p < 0.05$), but not between test locations. Only some specific sensory attributes showed systematic variation over repeated consumption (Figure 1).

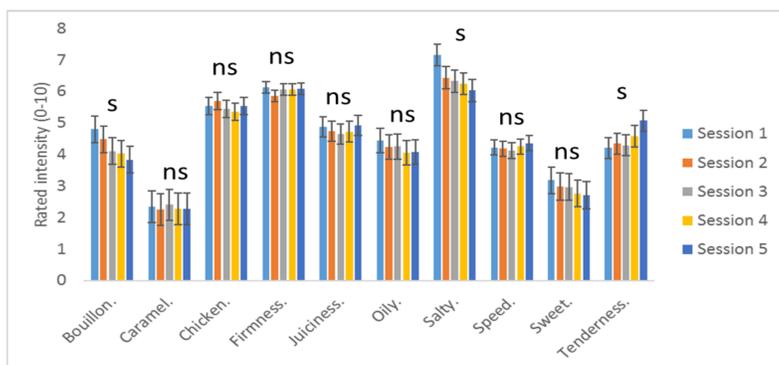


Figure 1: sensory attributes from session 1 to 5 averaged across participants, test foods and locations. Significant differences between replicates are indicated with "s", non-significant differences with "ns".

In contrast, implicit measures showed systematic effects of test foods, test locations, and repeated consumptions ($p < 0.05$).

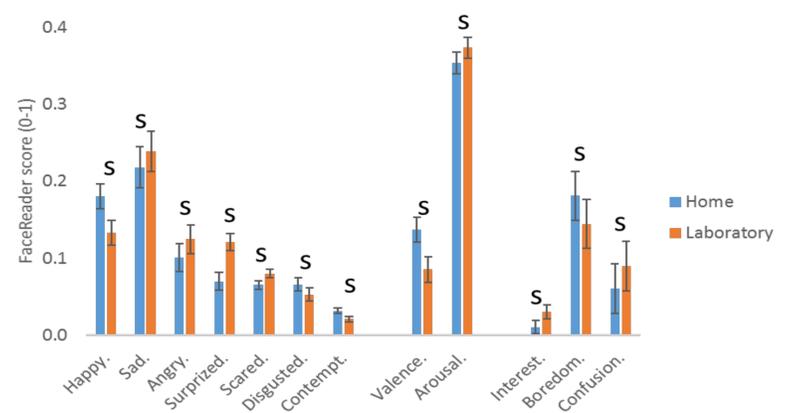


Figure 2: facial expressions, dimensions and affective attitudes per test location averaged across test foods and participants.

Compared to consumption in the laboratory,

- consumption at home triggered more intense facial expressions of happiness, contempt, disgust and boredom ($p < 0.05$, Figure 2)
- consumption at home was faster and triggered higher heart rates ($p < 0.05$).

Finally, consumption became faster with repeated consumptions ($p < 0.05$, Figure 3).

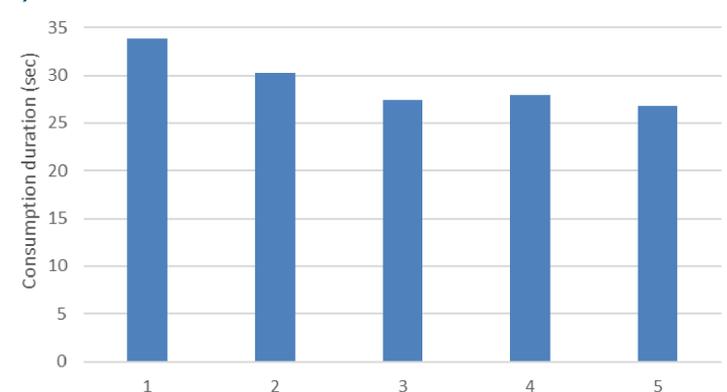


Figure 3: consumption duration (sec) versus repeated consumption.

Conclusions

1. Liking and sensory attribute scores varied significantly with test location but the effects were typically small. Overall, testing at home and in the lab resulted in similar product differences. This suggests that the larger effects of test location found in other studies may be related to factors other than just the test location itself.
2. Implicit tests were more sensitive to effects of test location and repeated consumption than explicit tests. Additional research is required to investigate the relevance of these measures to long term consumer acceptance of food products.

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