Effect of Food Neophobia on the outcome of a conventional CLT Hedonic Test

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Introduction

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Before launching a new product on the market, food industries generally rely on consumer tests to determine if their products are well accepted. However, consumers might be differently receptive to innovation depending on their education, culture and beliefs. One aspect of consumers' attitude is food neophobia that refers to the reluctance to ingest a new product. Several tools have been developed to measure the degree of food neophobia for a given person : Research on food neophobia was greatly aided by the development of the Food Neophobia Scale or FNS (Pliner & Hobden, 1992).

Objective

The objective of this study was to better understand how food neophobia would affect the outcome of a conventional CLT hedonic test where the product set contains very innovative flavors.

Materials & Methods

Preliminary Online questionnaire

Before running the hedonic test, a pool of consumers was asked to answer to the French translation of the Food Neophobia questionnaire online, on a 4-point agreement scale (Figure 1).

1. I am constantly sampling new and different foods.
2. I don't trust new foods.
3. If I don't know what is in a food, I won't try it.
4. I like foods from different countries.
5. Ethnic foods look too weird to eat.
6. At dinner parties, I will try a new food.
7. I am afraid to eat things I have never had before.
8. I like to try new ethnic restaurants.
9. I like to try new food.
10. It is funny to try unusual food.
11. At the restaurant, I rarely choose unknown dishes.
12. I would taste a new dish even if I don't like one of the ingredients.
13. I am very particular about the foods I will eat.

Figure 1 . 13-item Food Neophobia Scale (translated to French for the study)

Consumers

126 individuals (88 females - 38 males) were then selected for being either neophobic (34 subjects), medium (53 subjects) or neophilic (39 subjects) and subsequently invited to participate to the CLT (Figure 2).

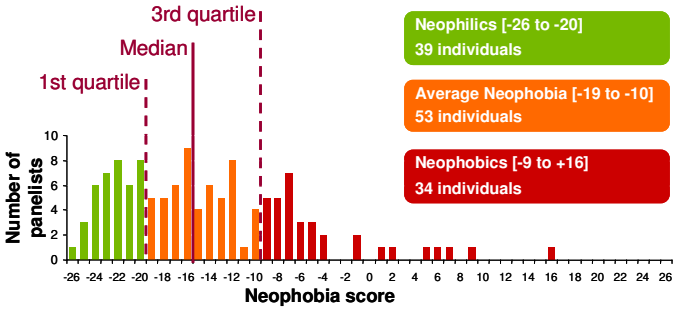

Figure 2 . Consumers' segmentation on Neophobia scores.

Products

Ten fruit-flavored drinking yogurts were selected to cover a range of very well known to very innovative flavors, according to internal knowledge (Figure 3)



Figure 3 . Drinkable yogurts evaluated in hedonic test.

Pliner, P., & Hobden, K. (1992). Development of a scale to measure the trait food neophobia. *Appetite*, 30, 93.
Rigal, N. & Ton nu, C. (2001). La néophobie alimentaire. In *Traité d'évaluation sensorielle : aspects cognitifs et métrologiques des perceptions* (pp.163-167). Paris : Dunod.

Protocol

- **Blind hedonic evaluation**

Drinking yogurts were first evaluated blind and rated on a 9-point hedonic scale (Figure 4). Products were presented in a monadic sequential way, randomized following a Balanced Latin Square.

Like extremely	9
Like very much	8
Like moderately	7
Like slightly	6
Neither like nor dislike	5
Dislike slightly	4
Dislike moderately	3
Dislike very much	2
Dislike extremely	1

Figure 4. 9-point hedonic scale.

- **Non Blind hedonic evaluation**

15 days later, subjects were asked to evaluate the same set of products. They were presented with the picture of the drinking yogurt with the name and the picture of the fruit. Same presentation plan was kept for a given individual for the two sessions.

Results

Results show that the more neophobic individuals are, the lower their mean hedonic score is ($p<0.05$) (Figure 5).

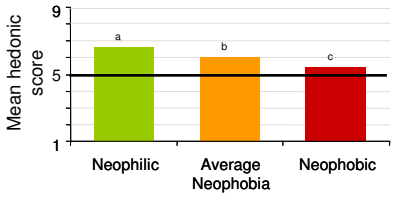

Figure 5. Mean hedonic score across neophobia groups. Hedonic scores with a different letter are significantly different ($p<0.05$)

Individuals give higher scores when they are presented with the picture and the name of the fruit ($p<0.05$) (Figure 6). This phenomenon is independent of the degree of food neophobia.

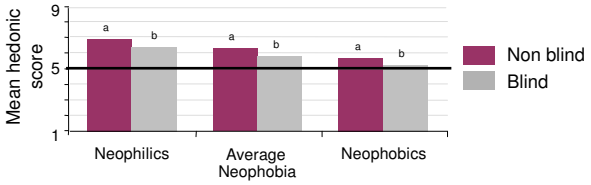

Figure 6. Mean hedonic score across neophobia groups (blind and non blind). Hedonic scores with a different letter are significantly different ($p<0.05$), for a given neophobia group.

7 flavours out of 10 are significantly less liked by neophobic individuals (peach, orange blossom, curuba, aloe vera, fruta do conde, fig and pomegranate) ($p<0.05$) (Figure 7). However, the three neophobic segments do not show a different product ranking based on mean hedonic scores.

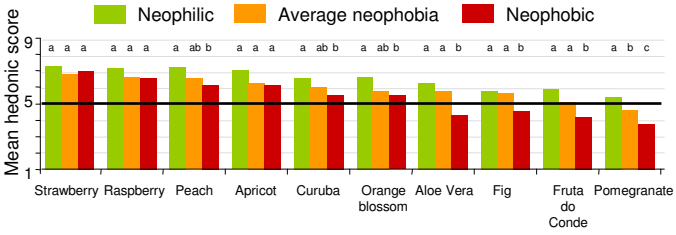

Figure 7. Mean hedonic score across neophobia groups for the 10 drinkable yogurts. Hedonic scores with a different letter are significantly different ($p<0.05$), for a given flavor.

Conclusion

One possibility to avoid innovative flavors failures is to take into account consumer panel's degree of food neophobia. This study shows that although neophobia level does not impact product rankings based on hedonic scores, it does play a role in the degree of liking. Therefore, when dealing with innovative flavor development, it would be useful to verify neophobic consumers' degree of liking before making any decision to go further in the development process. In other words, we should exclude innovative flavors that are not accepted by the more neophobic individuals, all the more that very neophobic people are not the ones who spontaneously participate to CLT tests.