

Comparison of asynchronous and synchronous modes to analyse consumer insights about food consistency. Free word association test in virtual context

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Introduction

Free word association (FWA) is a projective technique in consumer science to analyse associations that first arise on mind. The Cognitive Salience Index (CSI) takes values between 0 and 1. In a list of several things, the first and most frequently mentioned words will have a higher CSI. In consumer science, both FWA and CSI are useful to obtain insights related to food preferences and purchase. Although confinement has hindered the communication with consumers in sensory and consumer science, new virtual modalities are promising to contact them. On the other hand, in Latin America the word "consistency" is commonly related to food texture by consumers, but it is not applied as a sensory descriptor. For this purpose, the aim of this study was to analyse and compare the associations about food consistency with two virtual modalities.

Materials and methods

137 answered an online self-administered survey made with Google forms (asynchronous mode). 101 answered the same survey but in an online interview by videoconference (synchronous mode). In both surveys consumers had to express the first 3 associations that come to their minds when the stimulus "food consistency", "consistent food", "very consistent food" and "bit consistent food" was read.



The responses were analysed by data triangulation and grouped in categories according to their similarities. The mention frequencies of each category were calculated. Contingency tables were built, and the percentages of each category mention for each virtual mode (synchronous/asynchronous) were calculated. The Chi²-test was used to study the association between the virtual method and the term category. Z-test was used to compare proportions. For categories in common between different stimulus and virtual modes CSIs were computed.

Statistical analysis:

ANOVA (CSI ~ virtual modes X categories). When significant interactions were found, partitioned ANOVA was performed. The Tukey test was applied to compare means. Data analysis was performed with R (v. 4.1.2), InfoStat (v. 2020p) and SPSS (v. 25) and a 5% significant level was considered.

Results

2856 terms were elicited which were grouped in 33 different categories for "food consistency", 36 for "consistent food", 34 for "very consistent food" and 36 for "bit consistent food".

"semisolid food" (12.9%), "liquid food/drinks" (12.2%), "physical status" (11.5%), "soft" (8.4%) and "appearance and visual texture" (6.9%) for "bit consistent food".

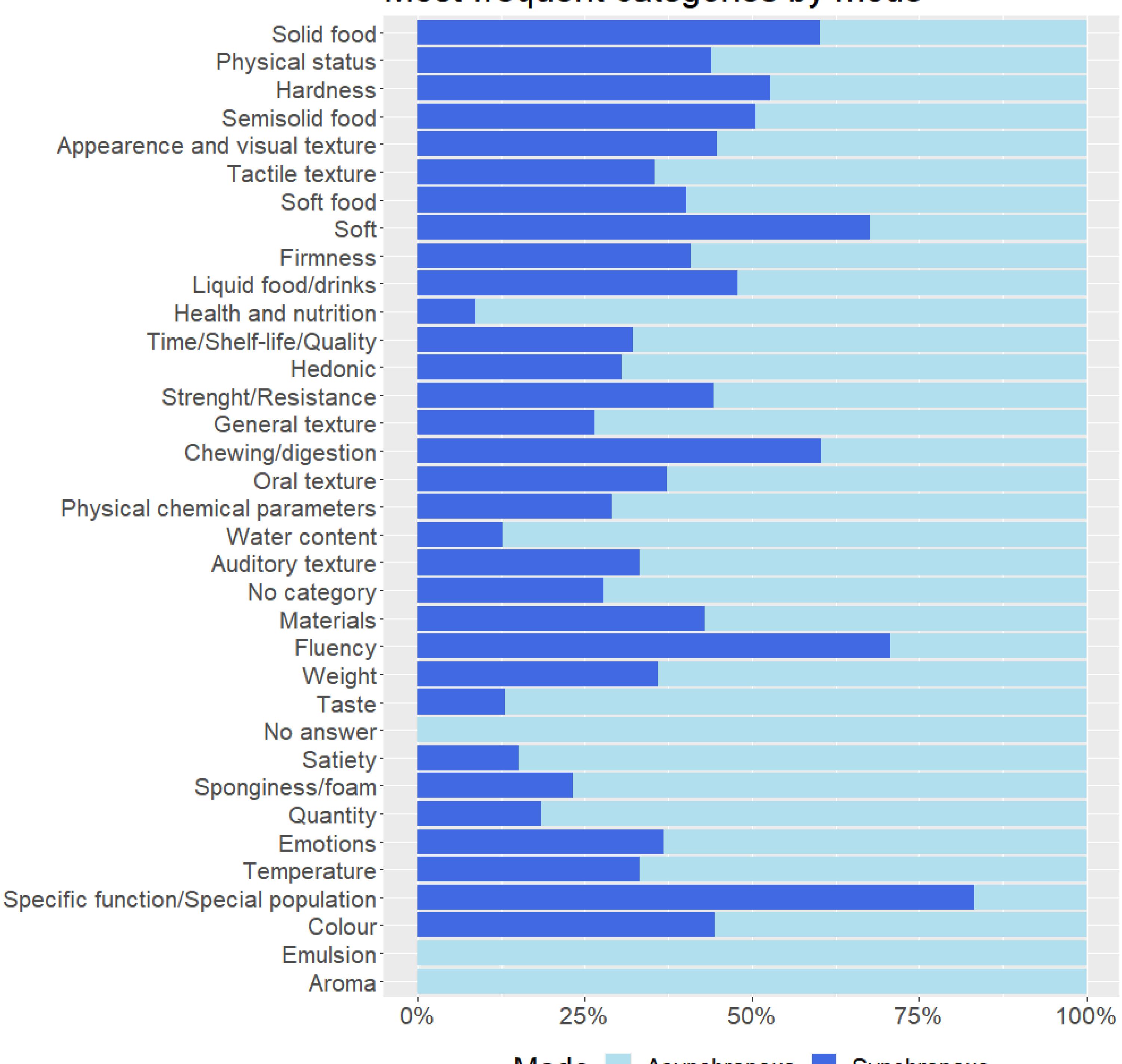
"solid food" (13%), "hardness" (10%), "soft food" (8.1%), "firmness" (8.1 %) and "semisolid food" (7.4%) for "consistent food";

"Physical status" (15%), "soft" (10%), "tactile texture" (10%), "hardness" (9.5%) and "general texture" (7.3%) were the most mentioned categories for "food consistency";

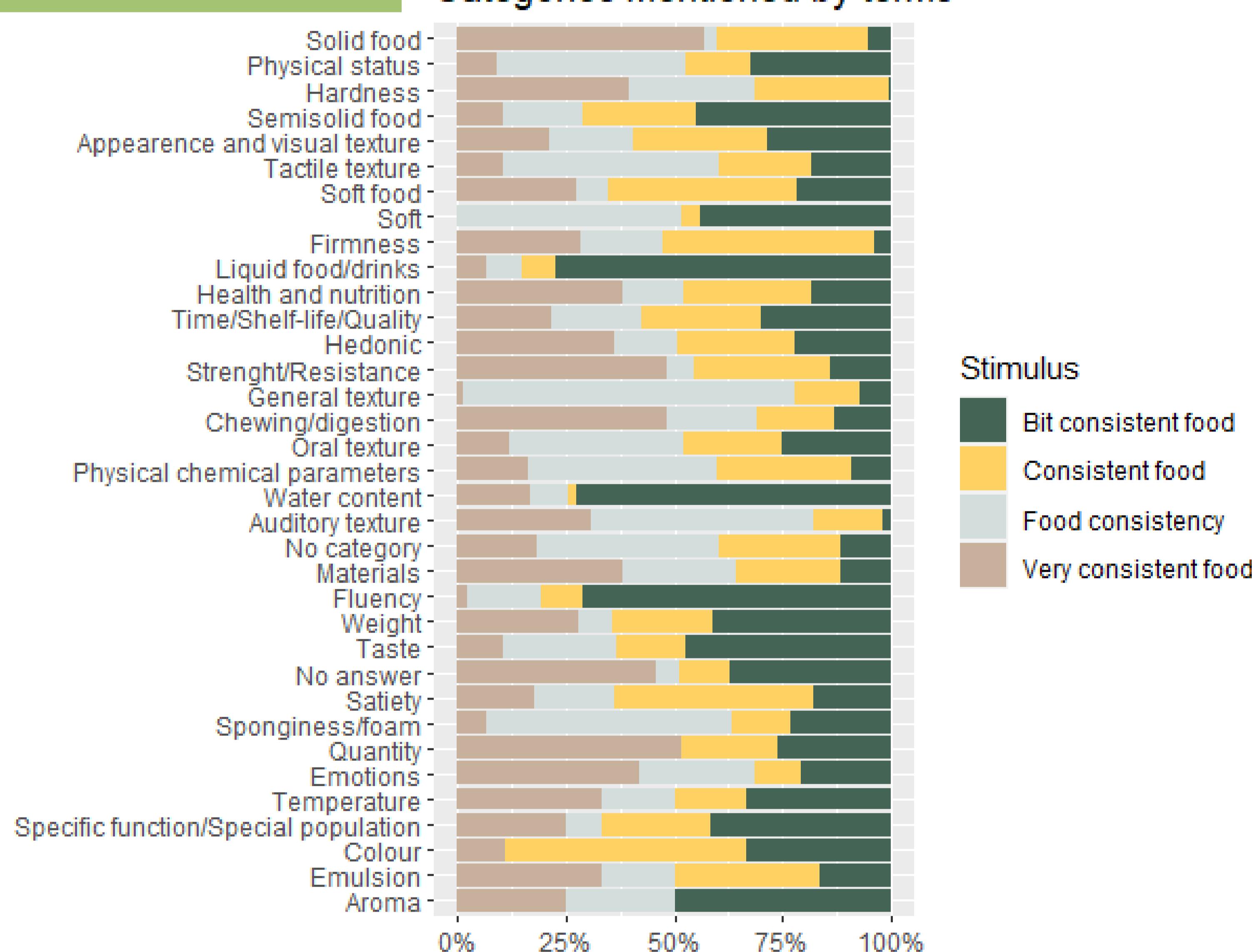
"solid food" (21.6%), "hardness" (12.9%), "soft food" (5.3%), "force/resistance" (5.3%) and "appearance and visual texture" (4.9%) for "very consistent food";

When comparing both virtual modes of survey, the frequency of mention was significantly different ($p<0.05$) for the following categories: "semisolid food, solid food, soft, quantity, water content, hardness, fluffiness/foam, fluency, special population, hedonic, chewing/digestion, health and nutrition, physical-chemical parameter, flavour, satiety, general texture, time/shelf life" (all $\text{Chi}^2>3.862$, $df=1$).

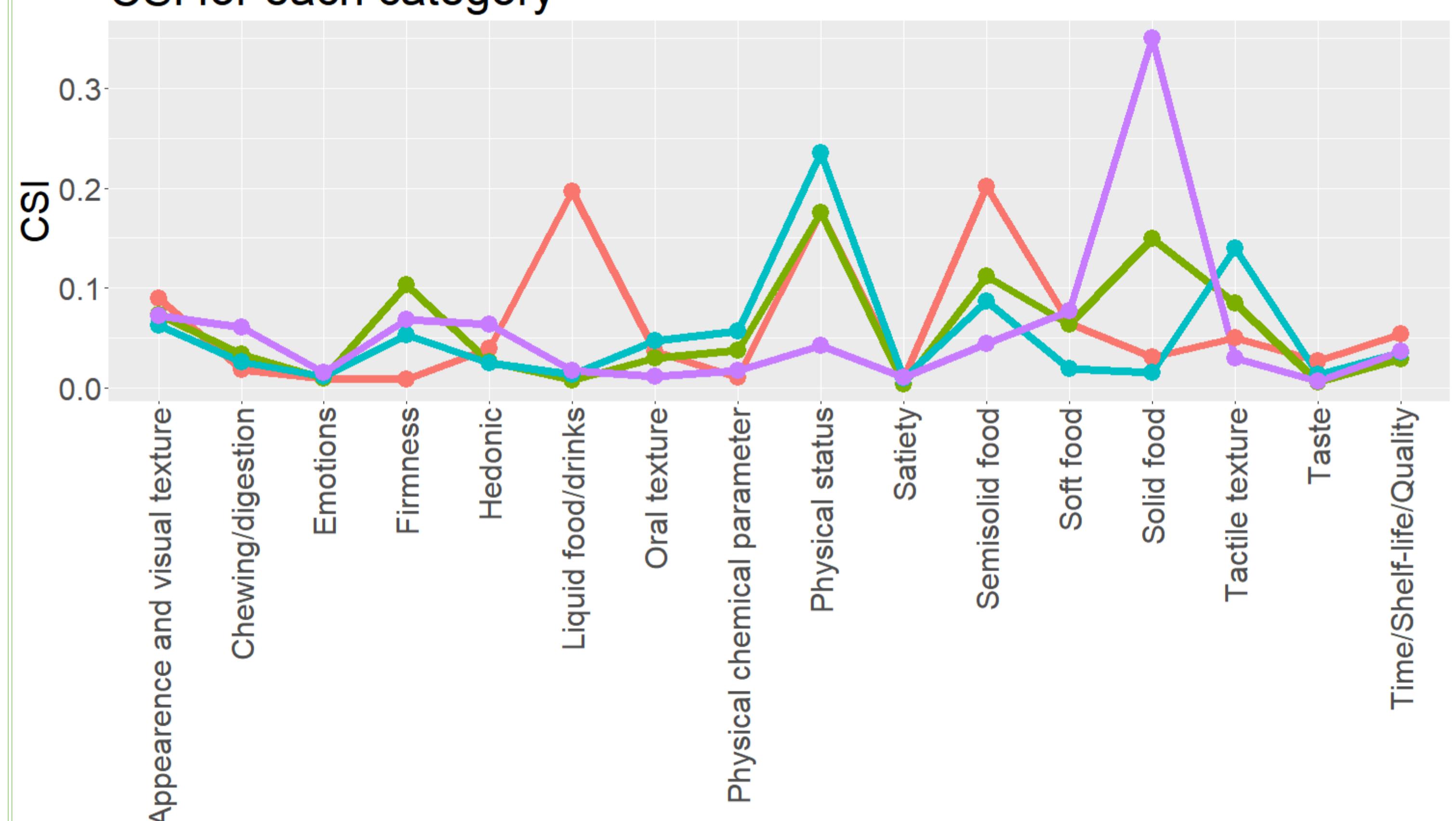
Most frequent categories by mode



Categories mentioned by terms



CSI for each category



A highly significant interaction (category x stimulus) in CSI was found ($p<0.0001$). The category "physical status" had higher CSI related to "food consistency" ($0.24, \pm 0.09$; $p<0.001$) than other categories. "Solid food" had the highest CSI for "very consistent food" ($0.35, \pm 0.17$; $p<0.01$). "Semisolid food" had the highest CSI ($0.20, \pm 0.09$; $p<0.001$) related to "bit consistent food". No difference was found between categories for "consistent food" ($p>0.05$). Hence, the consumers had difficulties to associate a category to a stimulus unless it had an adverb of quantity which was more useful to represent a scale. No statistical differences were observed on CSI between the virtual modes ($p>0.05$).

Conclusions

Both modalities of virtual survey might be optimal to identify several characteristics about consumer insights due to there are no significative differences between the information obtained.



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