Sensory properties place in naturalness perception for consumers in cosmetics

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Introduction

Since the last years, the **natural aspect** of products **drives more and more consumer choices** whether in food or non-food market.

Naturalness dimension can be perceived according to different aspects of a product, such as formula composition, brand commitments and values, packaging or sensory properties. The **contribution of the sensory dimension** remains quite unknown in the **naturalness perception**.

Objectives

- To weight the sensory properties in the natural perception of the cosmetic products
- Then to investigate which sensory criteria drive to naturalness perception

Materials & Methods

Part I : Consumers' based study

80 women, 40 commercialized face care products of 40 brands available in France

↳ Around **1/3 organic**

Consumers had 40 **fully branded products** to sort : *Could considered formula composition, brand commitments and values, packaging, sensory properties…*

They performed Sequential Agglomerative **Sorting task**, SAS *(1)*, on **perceived naturalness**:

- Creating groups of products which similar natural characteristics, based on their own perceptions
- Explicating shared characteristics by writing them

Some groups created and characterized

Differences between **free sorting task** and **SAS**: instead of confronting consumers to all products (40 in our study) at the same time, they are separated into several clusters, successively brought to consumers. An adequate experimental design is required.

After SAS, consumers were asked to consider words they wrote. For each group of words, they had to imagine a product which **gathers all those characteristics** and **ranked it** on a 11 points scale on **naturalness** *(0 = not a all natural, 10 = totally natural)*.

It will allow to differentiate drivers of naturalness and drivers of non-naturalness.

Part II : Experts' profiling

10 panellists, same 40 products

10 sensory experts assessed objectively **40 products in blind** on basis of **14 sensory parameters** :

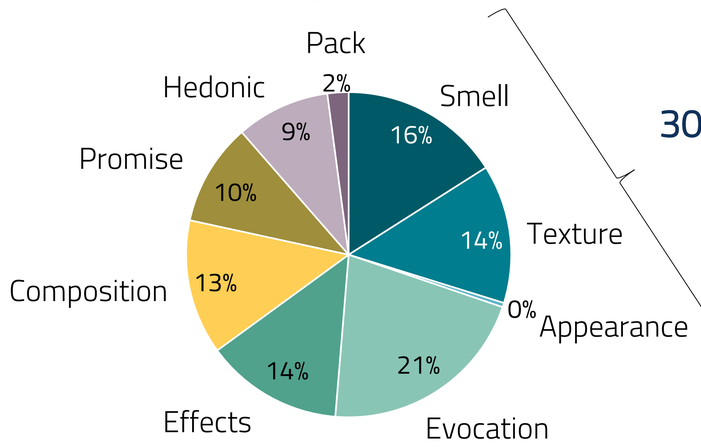
- Aspect : *Shiny, Fluid*
- Texture : *Adhesion, Thickness, Filant (which form a thread), Transparence, Slippery, Penetration speed, Sticky when applying*
- Finish : *Shiny, Greasy, Sticky, Present, Soft*

Principal Component Analysis **PCA** followed by Agglomerative Hierarchical Clustering **AHC analysis** allowed to define groups of products with similar sensory properties.

Results

Part I

Verbatims used to create groups:



30% Sensory terms

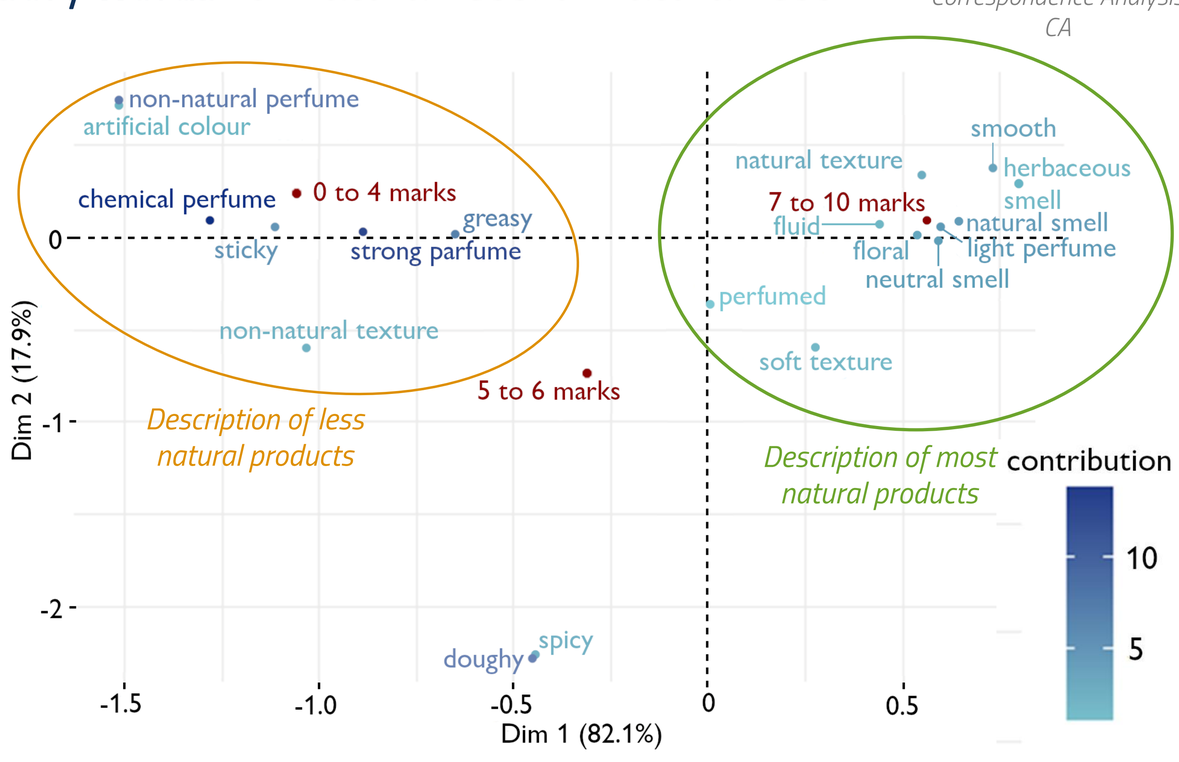
↳ **Not the most** discriminative ones

A creamy texture can be linked to both natural and non-natural products

Most contributive sensory words for naturalness/unnaturalness:

- Words around smell universe contribute more, and those on texture a bit less
- If we focus on sensorial words: clarification is needed on some specific texture/smell orientation

Correspondence Analysis CA



Part II

- Experts profiling on texture allowed to define 6 products groups, to show that organic products sensory are close and therefore to explicit: *what can a « natural texture » be?*

(1) Brard M., Lé S. 2019. The Sequential Agglomerative Sorting task, a new methodology for the sensory characterization of large sets of products. Journal of Sensory Studies Vol. 34

Conclusion

Sensory properties **play a part** in naturalness perception. It is easier for smell dimension than texture. Appearance does not have a huge influence.

Considering **all consumers words**:

- Non naturalness easier to describe *(more words discriminating)*
- Sensory properties account in naturalness perception but they are **not the most consensual**: *a same sensation can refer to a natural and non-natural perceived product*
- **Organic** products are overall **most natural** products
- A **ranking difference** exists for most of the presented products according to age groups (20 to 40 y-o and 40 to 60 y-o.)
- **No correlation between products groups** obtained in Part 1 & 2 (Rand index = 0,089)

Perspectives:

- Investigation of **others dimensions** driving naturalness perception *(claims, pack, composition…)*
- **Better understanding** of naturalness' perception of our two age groups
- Need to **profile smell** to clarify all sensory terms